Government of India

THE ALL-INDIA

KHADI AND VILLAGE INDUSTRIES BOARD

Planning For Full Employment

1954

PLANNING FOR FULL EMPLOYMENT

सत्यमेव जयते

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INTRODUCTION

Although this is not the first time that a Khadi and Village Industries Exhibition is being held on an all-India basis, it is the first occasion on which such an exhibition is organised on behalf of the national Government. Similar exhibitions held in the past were organised by or on behalf of the authorities of the Indian National Congress, at the time and place where the Congress held its sessions. Occasionally, and on a more modest scale, they were organised by bodies like the All-India Spinners Association or the All-India Village Industries Association, independently or in colloboration with some other unofficial bodies.

The fact that a body which functions on behalf of the Government of the country has taken in hand the organisation of this type of exhibition has hence a special significance. Until the advent of independance the development of Khadi and Village Industries, howsoever great its value in a programme of socio-economic reconstruction, scarcely claimed the attention of those in-charge of the governance of the country. The movement was scoffed at, except during times of national upsurge, when it was deemed suspect for political reasons. With the coming into office of governments drawing their inspiration from the same source from which the movement of Khadi and Village Industries derived its initial impulse, its ideology and its creative energy, it was only natural that, gradually, khadi and village industries came to be recognized as essential features of a programme of rural economic development.

On this process, the Planning Commission set its seal of approval a year and a half ago. The development of khadi and other villages industries had, in the view of the Planning Commission, to be accorded in the national plan the same high order of priority as attached to the reorganization of our agricultural industry.

For the execution of this integral part of the First Five Year Plan, the Planning Commission suggested the creation of an All-India Board, charged with specific responsibility in that behalf by the Government of India. Not long after the submission of the Plan to the nation came the appointment by the Govern-

ment of India of the All-India Khadi and Village Industries Board. It is this Board which has made itself responsible for the holding of the exhibition.

The Board's object in organizing this exhibition is broadly twofold. The first is the usual one of arranging an attractive display of certain types of products, with a view to promoting sales. Ordinarily, when such displays are organised, individuals or business concerns, who are financially interested in production or sales, sponsor or support these exhibitions as part of their sales campaigns. At this exhibition, there no entrepreneurs, private or joint stock, who may expect to benefit by the increased custom it may fetch. The products on display or for sale are the handiwork of artisans of whom custom is sought by quasi-philanthropic or co-operative institutions. The sole aim of these bodies is to render service to the unorganized rural producer by making his products better known and more readily available to the consumer in urban areas.

The second main purpose is educative. The customers, which term includes the citizens of or visitors to Delhi, will have an opportunity of seeing for themselves how purely hand-made goods of various descriptions are produced what are the raw materials, the tools, and the processes, and above all the deft human hands that go to the making of a product. They will appreciate the fact that when they are called upon to pay a little more for the hand-made product than that turned out with the aid of power-driven machinery, it is a tribute they pay to the traditional skill, a slight premium for ensuring that the skill is kept alive and the human beings who exercise it are not forced into a state of enforced idleness.

For the producer, too, the exhibition has an educative value. The demonstrations and the products, both, will evoke interest as well as criticism. The craftsmen, artisans, those assisting the demonstrations, as also those whose concern is to instruct and organize them, will undoubtedly stand to gain by the advice and suggestions of friendly critics and of the consumers. The technological improvements that are in progress in various sectors of the movement will be subjected to public scrutiny which, it may be hoped, will have a salutary effect on the progress of the work of research and investigation. Similarly, while the exhibition affords a unique opportunity for putting before the public a clear view of the economic basis of the programme, there will present itself an equally valuable opportunity for studying the reaction of students of economics, of

businessmen, of administrators and of the common man to the thesis for which the organizers of the Exhibition claim the sympathy and support of the public.

In this modest brochure, it is the aim of the All-India Khadi and Village Industries Board to present, on this occasion, a factual survey of the Khadi and other village industries which are comprised in the programme of the Board of the schemes of development that have been chalked out and, finally, of the economic basis of the demands that are put forward on behalf of the various industries for financial aid, for reservation of spheres of production or for some measure of protection. The case for Village Industries can be urged—as it has been not only in India but even in highly industrialized countries—on various grounds. In the context of present-day conditions, however, two factors should count with us more than others in the re-ordering of our economy. The first is that of employment and the second that of financial resources.

The programme of revitalizing and reorganizing Khadi and other Village Industries if pursued vigorously with the support of the State and the goodwill of the community, will help in increasing to a considerable extent the volume of full-time and part-time employment, especially in rural areas. In carrying out that programme, the strain that will be imposed on the financial resources of the State will, relatively, be inconsiderable, because the mechanical processes are simple and the tool and appliances are cheap and easily available. This is no mean advantage, at a period in economic history, when other sectors of our planned programme, agricultural or industrial, call for large outlays. In the following pages, an attempt has been made to present a picture of the First Five-Year Plan in the sphere of Khadi and Village Industries and to indicate the place it occupies in the scheme of national reconstruction so as best to fit in with these two basic requirements of our economy.

VAIKUNTH L. MEHTA

The All-India Khadi and Village Industries Board

The All-India Khadi and Village Industries Board was inaugurated on 2nd February, 1953 by the Prime Minister, Shri Jawaharlal Nehru.

The idea of constituting a Board of this kind came up for consideration as early as in 1951, when the Planning Commission began grappling with the problems of agriculture and rural economic development. A question of utmost importance was the availability of the requisite capital resources for industrial planning and of finding gainful occupation for the teeming millions which lived under submarginal conditions. It was recognised that capital was scarce in India whereas manpower was abundant. Rapid capital formation was impossible in a backward and under-developed economy, unless the vast manpower was productively employed. Development of village industries inevitably came to the forefront. How best this task could be achieved was discussed in its various aspects.

The All-India Spinners Association and the Sarva Seva Sangh which were devoted to the cause of development of village industries and rural re-construction had gained considerable experience under the guidance of Mahatma Gandhi and held definite views in this regard. Leaders of these organisations were brought into consultation. A meeting was held at Rashtrapati Bhavan on the 17th June, 1952 in which, besides the President, Ministers for Planning, Finance and Commerce and Industry, members of the Planning Commission and a few eminent constructive workers were present. In the interest of social justice, employment and decentralised functioning of society, it was decided that Khadi and village industries deserved a rightful place in the economy of the country. The idea of an independent organisation functioning outside the government departmental routines, entrusted with the task of executive action was also mooted.

The All-India Spinners Association and the Sarva Seva Sangh found it difficult to accept the responsibility for so onerous a task without the necessary freedom of action and a definite government policy based on Gandhian concepts for development of Khadi and village industries. The second meeting of leading constructive workers, Ministers and officers of the Central Government was

held in August, 1952 at the Rashtrapati Bhavan in New Delhi, when the formation of the Board was agreed to.

As a result of further discussions, the status and powers of the Board were more or less clarified. The Board was to function through the Central Ministry of Industry and Commerce. It would be an advisory body, but the advice tendered by it would be generally accepted. Neither Khadi nor other village industries programmes would suffer for want of funds. Whether the Board should have statutory authority could be considered at a later stage in the light of experience gained after working for a short period. Shri T. T. Krishnamachari wrote to the Chairman of the Board that for all material purposes the Board would be autonomous and conventions could be evolved in this regard.

The Board was formally constituted by a Resolution of the Government of India on the 14th January, 1953, with the following personnel :—

1. Shri V.L. Mehta —Chairman.
2. „ A.W Sahasrabudhe
3. „ Dhwaja Prasad Sahu
4. „ Dwarkanath Lele
5. „ G. Venkatachalapathy
6. „ Jhaverbhai Patel
7. „ Lakshminarain
8. „ Raojibhai N. Patel
9. „ R. Srinivasan
10. „ Satish Chandra Das Gupta
11. „ Sidharaj Dhadha
12. „ Srikishnadas Jaju
13. „ Vichitra Narain Sharma
14. „ V.V. Jerajani
15. „ Pranlal S. Kapadia —Member-Secretary.

The Resolution further defined the constitution and functions of the Board in the following terms :—

"1. The Board will appoint Vice-Chairmen, not more than two in number, and Joint-Secretaries, not more than two in number, and define their powers.

"2. Additional members will be appointed as and when necessary in consultation with the Board.

"3. Representatives of the Ministries of Finance, Commerce and Industry, Rehabilitation and of the Planning Commission will attend meetings of the Board and participate in its proceedings on behalf of Government.

"4. The Board will work in close co-operation with the State Governments and the All-India Spinners' Association.

"5. The headquarters of the Board shall be Bombay.

"6. The Board will be responsible for preparing and organising programmes for the production and development of Khadi and village industries, including training of personnel, manufacture and supply of equipment, supply of raw materials, marketing and research and study of the economic problems of different village industries. The Board will also function as a clearing house of information and experience relating to these industries.

"7. The Government of India propose to create a Khadi Fund from which grants or loans will be made for financing, in whole or in part, activities necessary for the development and improvement of the Khadi industry.

"8. The Government of India also propose to make available separate funds for the development and improvement of the Village Industries."

During its existence for a period of one year, the Board has done some preliminary work in connection with the development of Khadi and village industries. The initial work carried out by the Board naturally was to create and strengthen the necessary structural organisation to implement its programme. The industries that came under the purview of the Board were those on which the All-India Village Industries Association had carried on considerable investigation and research. The Board found from such information as available, that the task entrusted to it was so immense ,that its implementation called for a nation-wide organisation. The first step taken by the Board was to demarcate the country into seven different zones. A director was to be in-charge of each zone. His function was to co-ordinate the activities of individual organisations engaged in the development of village industries in the State which came within his zone and those of the State Government. He, that is to say, acts as a liason

between State Governments in his zone and production centres in those States, and as the representative of the Board on the State Boards in his zone and thus constitutes the link between the Board and the State Governments.

The next step taken was to find out experienced workers who had intimate knowledge of the industries concerned and had received specialised training in them. Fortunately they were available and were appointed as organisers for these industries. The duty of these organisers is to investigate the facts about their respective industries, assess the possibilities of their reorganisation and development and submit proposals to the Board for framing appropriate programmes.

The Board further had to enlist the co-operation of State Governments with a view to co-ordinate the development programmes of the Board and those of the States. The Board considered it desirable that development work in the States should be carried on through State Boards provided that these Boards are constituted mainly of constructive workers and are granted authority to execute programmes formulated by the Board. State Governments were approached and the Governments of Bombay, Madhya Bharat, West Bengal, Madhya Pradesh, Assam, Madras, Rajasthan, Hyderabad, Saurashtra, Orissa, Ajmer, Delhi and Tripura have constituted State Boards. In Saurashtra, the State Board is a statutory body. Recent legislation in Bombay also vests statutory powers in the Village Industries Committee which had so far been functioning analogous to the State Board. In the new State of Andhra, it is hoped, a similar body will be set up with statutory powers. On the request of the Chief Minister of Andhra, the Board has submitted a draft scheme in this regard. Leaving Saurashtra and Bombay, the State Boards in other States are purely advisory, having no executive power or other authority. In these States village development programmes are carried out by Government departments and the funds are disbursed through the machinery set up by these Departments.

A number of sub-committees have been set up to advise the Board on different aspects relating to the development of Khadi and Village Industries. These committees have been constituted with a few members of the Board who are specially competent to advise it on specific problems. The important sub-committees set up so far are:

A. Standing Training Committee

The Committee has conducted a survey of the existing training facilities in different States for the training of artisans in different cottage industries and has

made suggestions for improvement. The establishment of a technical research institute devoting itself entirely to problems connected with village industries, has been planned by the Board and a Central Training Institute will shortly be opened at Nasik.

B. The Budget Committee

This Committee draws up the Budget of the Board after considering various schemes and programmes of development before it. The Committee has submitted the Budget for 1954-55 to the Government.

C. Economic Research Committee

This Committee is engaged in studying the problems of village industries and suggesting measures for their development. Such measures may cover the formulation of a production programme for village industries in relation to large-scale industries, the imposition of a cess on mill industry or the grant of a subsidy to cottage industry. This Committee has made various proposals so far regarding the imposition of cess and grant of subsidy in respect of village oil industry, handpounding of rice and cottage match industry.

D. Research Committee

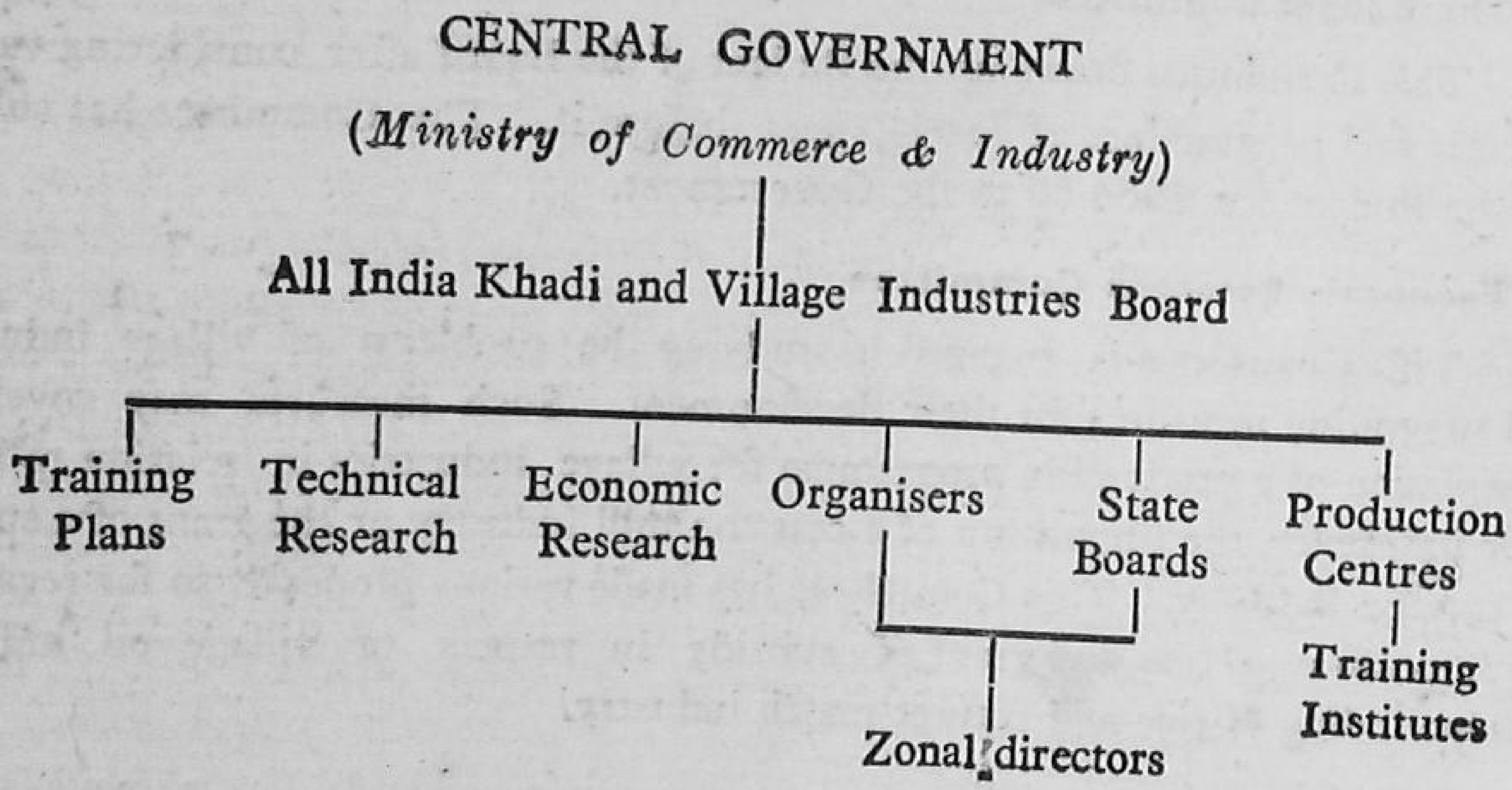
This Committee is to draw up a programme for the organisation of a Central Research Institute to conduct research on the various technical and productivity problems of cottage industries. Preliminary steps to set up the laboratory have already been taken.

The Board met a number of times and considered various proposals for the development of Khadi and village industries. A number of proposals were submitted by the Board to the Government for their consideration and implementation. These proposals relate to the development of Khadi and village industries and include the grant of subsidy to Khadi at the production, marketing and selling stages, the grant of interest-free loans for the purchase of cotton during seasons, the setting up of a village industries laboratory and steps for the development of village industries through production programmes. Some of these proposals are under the consideration of the Ministry of Commerce and Industry while some others have been accepted by the Ministry.

The Government have placed funds at the disposal of the Board for granting loans and subsidies and also to meet expenditure directly incurred by it. The

aggregate amount utilized during the year now coming to a close was Rs. 1,43,00,000. For the coming year, the actual provision is an expenditure on grants of Rs. 1,76,00,000 and loans of Rs. 2,03,00,000.

The structure of the Board as it functions to-day is :



CHAPTER I

VILLAGE PLANNING

It is a happy augury that through the process of reviewing the progress achieved so far in the First Five Year Plan, the thoughts of the planners have turned to a basic aspect of planning, viz., village planning. If planning were to ask for the participation of the village people in programmes conceived in general terms in the shaping of which they have had no hand, it would not be possible to evoke their response to the desired extent. Such programmes do not give to the villagers a sufficient sense of purpose, much less develop their initiative. These can come only if the villagers are helped to make their own Plan. In the process of planning, they become aware not only of the overall position of their needs and resources, but are also seized of an objective which provides them incentives for organising and executing planned programmes which would include agricultural production, minor irrigation, soil conservation, village forests, village industries, construction and maintenance of local works, social amenities and health and cultural activities. A plan formulated by the villagers on their own initiative, with technical and financial assistance from the Government, for making the best use of resources available with them with a view to achieving an overall objective of full employment and minimum consumption standards would really be the people's plan which could reasonably be expected to mobilise their energy to the full.

Full Employment

If targets of production are fixed mainly on the basis of the availability of finance, the programme may become unduly limited. After all, a total expenditure of Rs. 2,069 crores in the first five years will mean only an expenditure of about Rs. 11 per head per annum for the total population of the country. The rural problem has, therefore, to be seen in terms other than merely financial.

With the decline of opportunities for gainful employment such as through industries, agriculture remains the main stay of the villagers. Agriculture, as is well-known, works under a deficit economy. This has led to the abject poverty

of the villagers whose purchasing power has, on the whole, not been expanding. How are they to create the surplus capital for undertaking development programmes ? With economic activity at a low level, employment thus remains limited.

The picture is not, however, so gloomy as it appears. There is a way out for the villages for building up prosperity, if only they could turn their weakness into strength. If the villagers are weak in finance, they are strong in manpower which is ultimately the real resource for the production of wealth. If manpower is used as a resource, we have an abundant supply of this resource in the country and the greater the extent to which this resource is used, the larger the development programme that could be undertaken. The utilisation of manpower which is generally thought of as a problem, can become a gain and an opportunity. The emphasis has thus to shift from finance to manpower as the basis for formulating programmes of development. This is possible if the villagers make their own plans.

Development and Consumption

When plans are formulated on the basis of limited resources, the choice is between emphasising consumption on one side and development on the other. The view is naturally taken that while everything can be said for raising the low consumption standards of our people, the development aspect can hardly be sacrificed as that is the surest way of raising their standards of living in the long run. If raising consumption which is immediately desirable from the point of view of the masses is given priority, development is likely to suffer. Development has, therefore, to be emphasised and is being emphasised. A plan capable of achieving development and higher consumption simultaneously can alone enthuse the masses into action. If our manpower is treated and used as a resource, it should become possible to undertake rapid development and at the same time provide for an increase in consumption standards.

Agency to Mobilise Manpower

Manpower cannot be used as a resource for development programmes in the village unless there is an agency in overall charge of local resources. Without such an agency functioning effectively, it is not possible to pool the manpower resources in the village for planned development. The old organisation under

which village communities functioned as self-sufficient units has broken down. Although the unit of operation under the old organisation was the family, there was mutual exchange of goods and services within the village which made for the full utilisation of manpower. The impact of development in production and distribution has greatly weakened the communal bonds of the village as a social and economic unit and has thus adversely affected the opportunities for employment.

This link has, therefore, to be re-established through a new type of village organisation which meets the present needs. It is becoming increasingly evident that under the present circumstances the idle resources in the village can be put to the best use, so as to bring about an all round development of the village life, only if the use of the village resources is substantially socialised, even while the forms of ownership are not altered. If the village becomes increasingly the unit for economic operations, the full utilisation of the manpower in the village and the creation of the necessary amenities for decent living become practical possibilities. The village community will function through the Gram Panchayat. At present panchayats tend to be restricted in their functions, and responsibilities. To be really effective, the Gram Panchayat should be incharge of the welfare and development programmes of the village community. The Planning Commission envisaged that the Village Panchayat would assume responsibilities such as :—

(i) framing programmes of production for the village,

(ii) framing budgets of requirements for supplies and finance needed for carrying out programmes,

(iii) securing minimum standards of cultivation to be observed in the village with a view to increasing production,

(iv) organising of voluntary labour for community works,

and (v) making arrangements for co-operative management of land and other resources in the village, etc.

In fact, the Gram Panchayat has to act as a positive, aggressive agency for development. Top priority should be given to the programme of creating and enabling Gram Panchayats to undertake the vital function of village planning.

Village Service

Preparation of manpower budgets is likely to present some intricate problems. There are certain occupations or activities which are more remunerative than others. Certain sections of the village population, particularly women, are comparatively overburdened even while menfolk remain idle. Certain processing industries are unable to compete with factory production. The village life to-day is full of hardships. Much time and energy have to be wasted in getting facilities for mere existence. Good water supply which is the basis of hygeinic living, is deficient. Sanitation arrangements scarcely exist. Houses are anything but satisfactory. Fuel supply is deficient and of poor quality involving extra attendance in the kitchen on the part of women. When energy has to be wasted in procuring these elementary facilities, it is difficult to expect any appreciable rise in the working efficiency of the villagers. If manpower is pooled, programmes can be so framed as to secure greater leisure for all, particularly for women, as also to increase amenities in the village life. A programme to achieve the above objects can be attempted by creating some sort of a village service which will involve redistribution of occupations and activities and bringing certain activities under the system of joint village management. For example, to reduce the burden of work on women and to give them adequate cultural leisure, certain activities at present performed by them can be taken up by the village service. Certain processes which have to face competition can similarly be taken up by the village service on a non-profit basis. The village service which will work on the basis of pooling of the available manpower in the village, will also be able to create better amenities in the village.

Community Land

It is advantageous for the village community to own and manage some land in the common interest of the group. This arrangement can fill many gaps that may be left in preparing the village plan. If individual farmers are not able to follow a crop pattern which will provide balanced diet to the community, the common land can be used to make good the deficiency. The landless labourers can find work on the common land. The income of this land can be used for common purposes.

Our villages do have a tradition of creating village funds out of charities and village taxes. All such funds can be brought under a common pool and used for the common good.

Village Manpower Bank

As noted above, some arrangements have to be thought out for mobilising the manpower remaining unutilised in the village for purposeful activities. It will be useful if the Gram Panchayat creates a specialised institution, a kind of village manpower bank, for this purpose. It will be the function of the village bank to assess, through an intensive enquiry of families, the mandays that are available and utilised at present and thus arrive at the surplus mandays that could be utilised for development programmes in the village. Simultaneously, it will work out the mandays required in individual projects and try to equate the two sides by framing a time-table of work for the year. The projects are likely to be of three categories :

(i) Public utility programmes which are non-productive, such as roads, drinking water wells, recreation grounds, public buildings, etc.

(ii) Public programmes which are productive such as irrigation tanks, cow dung gas plants etc., and

(iii) Programmes of individual farmers.

For the first category of programmes, the bank will have to arrange for voluntary labour, although meals could be provided from the village fund for such labour. In respect of programmes of the second and third categories, it will be necessary to work out a system of deferred payment, at least for part of the wages. By maintaining accounts of individual families, the village bank can facilitate the deposits as well as the borrowing of labour. In essence the bank will thus function as an exchange agency, although it will take the initiative in framing manpower budget for the village. The village bank should not only help capitalise the local manpower, but should also play a useful role in encouraging small savings, whether in kind or in cash, and thus build up all forms of resources in the rural areas.

Co-operative Store

An important item in regard to which the idea of village has to be given effect to relates to the trade of the village. Trade should be so directed as will lead to the goal of full employment and to a net gain to the village in the balance of trade. This implies a certain arrangement in the utilisation of raw materials produced in the villages over which the village community should have the first claim for purposes of industrial production. Within the group, the co-operative store can also facilitate exchange of goods and services through barter as far as practicable.

The Gas Plant

Our villages have proverbially become the centres of dirt and uncleanliness. The disposal of night-soil presents the toughest problem. In the absence of proper arrangements for its disposal, night-soil is responsible for spreading disease in the villages. Various types of latrines have been devised and propagated by public institutions, but our villagers are loath to take to any method which involves handling of night-soil. The gas plant which has recently come on the scene, promises to bring the sanitation problem of the village nearer solution in addition to contributing considerably to the production of useful manure. The gas plant can be used either separately or jointly for night-soil and cow dung for the production of both manure and gas. This item should naturally come under the Village Service which can utilise the gas either for street lighting or for providing fuel to individual families. The gas plant thus serves the triple purpose of bringing about cleanliness in the village, increasing the manurial resources and providing additional fuel and is thus a very useful devise for improving living conditions of the villages.

Village Industries

There is general agreement that agriculture alone can hardly maintain the rural population. The need to reduce the pressure on land and to diversify the village economy is also accepted by all. On the basis of full employment, agriculture can hardly provide employment to more than 60 per cent of the rural population. It is only village industries that can contribute a major share to make up the balance of employment. In this connection it may be interesting by way of illustration to refer to the pattern of occupation which emerged

as a result of actual survey and plan recently prepared for Vedchhi, a village in the Bardoli Tehsil in Gujerat.

Budget estimates of labour units in the plan for Vedchhi during the first year.

Mandays available for work.

1,54,800	Calculated @ 60% of the population.	
	1,16,100	Mandays @ the rate of 45% for field work.
	38,700	Mandays @ the rate of 15% for indoor work.
1,800	Additional mandays available every year due to the increase in population at 13·5% in a decade.	
1,56,600		

Mandays required in the first year.		Probable utilisation of mandays at present.	
			Agricuture.
69,902	(44·6%)	(35%)	69,102 crop production.
			800 production of manure.
			Upkeep of Livestock and Dairy.
17,218	(11·0%)	(10%)	4,860 upkeep of bullocks.
			11,160 upkeep of other cattle.
			1,198 upkeep of sheep and goats.
51,400	(32.9%)		*Village Industries.*
	(25.1%)	(8%)	39,300 Cloth Industry.
			35,792 Production of khadi.
			3,208 Carpet, Pati, etc.
			300 Dyeing and printing.
	(0·8%)*		1300 Oil Pressing.
	(0·6%)		1000 Flour grinding by bullock chakkies.
	(0·6%)		1000 Pulse making.
	(1·3%)		2000 Paddy husking.
	(0·6%)*		1000 Pottery, brick making etc.
	(0.1%)		200 Lime making.
	(0·06%)		100 Carding and preparing beddings.
	(0·2%)		300 Masonry.

Mandays required in the first year.		Probable utilisation of mandays at present.	
	(1·3%)		2000 Workshop, for carpentry, smithy, fine work.
	(0·2%)		300 Tailoring.
	(0·3%)		500 Leather work.
	(0·1%)		150 Tanning of leather.
	(0·4%)		600 Bamboo work like baskets etc.
	(0·4%)		600 Rope making.
	(0·2%)		300 Stationery.
	(0·2%)		300 Toy making.
	(0·1%)		150 Match making.
			Development Programme.
19,800	(12·6%)*		5000 Land Development (major).
			300 Road construction.
			1400 House building.
			Public Health & Sanitation.
1200	(0·8%)		600 Sanitation.
			600 Public Works.
			Education.
1800	(1·1%)		1500 Teachers.
			300 Gardening and Physical Training.
			Administration.
300	(0·2%)		300 Gram Sevaks and servants.
			Co-operative Store.
600	(0·4%)		600 Purchase and sale of commodities.
			Poultry.
1,500	(1·0%)		1500 Upkeep etc.
10,000	(6·4%)		*Items under capital expenditare.*
		*13%	Estimated present utilisation under items marked*.
1,73,720	(111%)	66%	

The estimates of mandays were worked out from requirements of agricultural operations for various crops as verified from the working of the co-operative farming societies functioning in Vedchhi and the adjoining villages. The estimates for village industries were based on observation of the general condition of these industries in the village. From these estimates, it will be seen that about 11% labour is deficit if the full needs of the village are to be met. The deficit is, however, very small and can be made up by introducing better techniques or by people working for more than 300 days in a year. It is clear that village industries contribute practically to 1/3 of the total employment of the village. This, in essence, is the economics of village industries. It is enough to show that rather than looking upon village industries as providing a programme of relief, they should be regarded as an integral part of the planned economy of the village.

The importance of village industries to the villages has to be judged from yet another angle. If the villages were to produce and supply only raw materials and obtain finished goods in exchange, they get an unfavourable balance of trade, partly because under the present circumstances they lack the power to dictate terms either in selling raw materials or in buying finished goods, but mainly because in the bargain they lose the processing cost which they could retain for themselves. A recurring unfavourable balance continually reduces their purchasing power. This fundamental fact is lost sight of by those who advance the plea of cheaper goods supplied by factories. When the purchasing power is small, cheaper goods have less meaning. What is important is, therefore, not the cheap supply of goods to the villagers but to help them in raising their purchasing power through local conversion of raw materials into finished goods. This process also gives them opportunities for development which production of raw materials alone can hardly provide.

Village Prosperity is Indivisible

While this fact is generally recognised, it is often contended that for the benefit of a small minority of artisans to whom village industries provide employment, farmers who form the bulk of the population have to sacrifice a part of their purchasing power. To take such a view, however, is to misunderstand the character of village life. A village is a social group in which, by and large, prosperity is indivisible. However unequal the distribution may be, all the

individuals of the group do have their share in one form or the other out of the total income of the village. A part of the village population remaining unemployed is not only an economic burden but also acts as a cultural drag on the rest of the community. The choice before the farmers is thus to share with the unemployed of the village their limited income from agriculture or have the full share of the agricultural income for themselves and pay a little more to the village artisans for their products. By adding to the net income of the village, village industries do raise its total income, the benefits of which are bound to be shared by all concerned. Viewed in this perspective, village industries can hardly be regarded as burdensome even for the farmers. The entire community developes together in interdependence.

Board's Programme for 1954-55

To make a beginning in this direction, the Khadi and Village Industries Board has formulated a programme of intensive development of village industries in selected rural areas each having about 20,000 population. Assuming 50 per cent to be the working population and taking 60 per cent of the working population as fully employed, full time employment may have to be found for 4,000 persons in each unit. The basic objective behind the programme is to organise production for local consumption. At the level of consumption now obtaining in the rural areas, the programme envisaged provides for the full-time employment of 2,000 persons, though actual employment may be spread out over a large number of persons by way of part-time work. It is expected that in course of time as consumption standards rise on account of increased purchasing power derived from additional employment out of this programme and the improvement of agriculture, an increased amount of employment will be provided.

The unit of 20,000 population is envisaged from the point of view of providing scope for a common godown in a central village and also comparatively wider markets for the exchange of goods which are produced locally. To begin with, the consumption standards on which the programme is proposed to be based are ;

Cloth : 10 sq. yards per capita per year.
Oil : 6 lbs. per capita per year.
Rice : 16 oz. per capita per day.
Gur : 20 lbs. per capita per year.

The employment provided by each industry in terms of full-time employment is expected to be as follows :

Name of Industry.	*No. of persons to be employed.*
Khadi	1,300
Village Industries :	
Handpounding of rice	400
Gur	120
Oil pressing and oil industries	50
Pottery and house-building	50
Leather industries	50
Fibre industries	30
	2,000

Apart from expenditure on central co-ordination, the expenditure involved in organisation, training and production subsidy is to be met from provisions made under individual village industries schemes.

CHAPTER II

KHADI

The re-discovery of the spinning wheel and Khadi by Mahatma Gandhi some 45 years ago is a significant contribution to new economic thinking. At the time when he first spoke of the spinning wheel, he had not seen one and did not know the distinction between the wheel and the loom. This was in 1908 when, in a flash, he saw in it the panacea for the pauperism of the Indian masses and a doughty instrument of national freedom. Some twelve years later, when he advocated Khadi, the handspun and handwoven cotton cloth, as the only true Swadeshi, it came to signify many things and around it grew certain high principles of economics and ethics. The "Khadi Spirit" came to be synonymous with plain living and high thinking and presaged the evolution of a new social order devoid of inequities and inequalities. It restored to manual labour its dignity and established the fundamental truth that man must live by the sweat of his brow.

To the critics and scoffers among whom were not a few economists steeped in western lines of thinking, Gandhiji said: "Khadi is the only true economic proposition in terms of the millions of villagers until such time, if ever, when a better system of supplying work and adequate wages for every able-bodied person above the age of sixteen, male or female, is found for him in the field, cottage or even factory in everyone of the villages in India; or till sufficient cities are built up to displace the villages so as to give the villagers the necessary comforts and amenities that a well-regulated life demands and is entitled to. Some people scoff at Khadi and betray signs of impatience or disgust when one talks of handspinning. But it ceases to be an object of disgust or ridicule immediately you attribute to it the power of removing India-wide idleness, unemployment, and consequent pauperism. Many will not accept my position, but I have faith that the day will come—it may be after my death—when men will say that after all what Gandhi said was right."

And today it can be said that economic thought in post-war years has been tending towards the truth that Gandhiji espoused against great odds. Experts

have found, after elaborate inquiry and laborious thinking, that in countries like India, village industries like Khadi are the most feasible pattern of development.

Hand-spinning and hand-weaving have been India's traditional village industries. The spinning wheel, or the Charkha, was being universally plied in most Indian homes. It is on record that cotton spinning and weaving had existed as a thriving industry and trade of India between 1500 B.C. and 1500 A.D. Every process from the picking of the raw cotton to the turning out of the finished fabrics was done by hand. The quality and count of yarn and the texture and fineness of the cloth woven by the Indian spinners and weavers constituted the wonder of the old world. It was because of the great progress that the industry had achieved that India had a large and extensive export trade on three continents. Even as late as 1702, the import of Indian cotton fabrics into England alone amounted to £ 1,053,725, not a small amount for those times. Of the quality of our cottons, Marco Polo and Tavernier have sung poems of praise. The texture of Indian Cottons has even been compared to the likeness of a spider's web—so fine, so delicate and so strong that Tavernier has this remark in his diary (1660) : "If a person puts on such cloth on his body, it is visible just as if he were naked."

The story of the deterioration, decay and total extermination of so universal an industry in Indian villages is written in blood and tears. In 1850 Karl Marx wrote : "The handloom and spinning wheel, producing their regular myriads of spinners and weavers, were the pivots of Indian society. It was the British intruder who broke up the Indian handloom and destroyed the spinning wheel. England began with driving the Indian cottons from the European markets; it then introduced twist into Hindustan and in the end inundated the very mother country of cotton with cottons. British steam and science uprooted, over the whole surface of Hindustan, the union between agriculture and manufacturing industry.

"England had broken down the entire framework of Indian society, without any symptoms of reconstruction appearing. This loss of his old world, without the gain of a new one, imparts a particular kind of melancholy to the misery of the Hindu, and separates Hindoostan, ruled by Britain, from all its ancient traditions and from the whole of its past history." Such is the tragic story of the destruction of the universal home industry of India.

The Indian textile industry came into its own with the rising tempo of the liberation movement. The Swadeshi agitation which gathered momentum with the dawn of this century alongside the political unrest over the partition of Bengal, gave to the industry a national support which outweighed Governmental discouragement and impediments. But Khadi was still unheard of and the handlooms worked with mill-spun yarn. Khadi came to be spoken about only after the return to India of Mahatma Gandhi from South Africa and as part of the Swadeshi movement. But "SWADESHI", he wrote, "is the invulnerable bulwork of the nation and it can only be said to be accomplished if it is practised as a national duty. Be it an end or a means, Swaraj without it is a lifeless corpse and if Swadeshi is the soul of Swaraj, Khadi is the essence of Swadeshi. The only Swadeshi cloth is *Khaddar*. The test of Swadeshi is not the universality of the use of an article which goes under the name of Swadeshi, but the universality of participation in the production and manufacture of such an article. Thus considered millmade cloth is Swadeshi only in a restricted sense. For in its manufacture only an infinitesimal number of India's millions can take part. But in the manufacture of Khaddar, millions can take part."

Free India is conscious of the phenomenal part that Khadi has played in the development and consumation of our national struggle.

But the story of Khaddi itself reads like a romance. Gandhiji who conceived it said on one occasion: "I do not remember to have seen a handloom or a spinning wheel when in 1908 I described it in "HIND SWARAJ" as the panacea for the growing pauperism of India. Even in 1915 when I returned to India from South Africa, I had not actually seen a spinning wheel. When the Satyagraha Ashram was founded at Sabarmati, we introduced a few handlooms there. The object that we set before ourselves was to be able to clothe ourselves entirely in cloth manufactured by our own hands. We, therefore, forthwith discarded the use of mill-woven cloth, and all the members of the Ashram resolved to wear hand-woven cloth made from Indian yarn only. The adoption of this practice brought us a world of experience. It enabled us to know from direct contact, the conditions of life among the weavers, the extent of their production, the handicaps in the way of their obtaining their yarn supply, the way in which they were being made victims of fraud, and lastly, their ever-growing indebtedness. We were not in a position immediately to manufacture all the cloth for our needs. The alternative, therefore, was to get our cloth

supply from handloom weavers. By adopting cloth woven from mill yarn as our wear, and propagating it among our friends, we made ourselves voluntary agents of the Indian spinning mills. This, in its turn, brought us into contact with the mills, and enabled us to know something about their management and their handicaps. We saw that the aim of the mills was more and more to weave the yarn spun by them; their co-operation with the handloom weaver was not willing, but unavoidable and temporary. We became impatient to be able to spin our own yarn. It was clear that, until we could do this ourselves, the dependence on the mills would remain. We did not feel that we could render any service to the country by continuing as agents of Indian spinning mills."

An earnest and impatient quest for the wheel and the hand spinner began. It was not till 1917 that they were found in Vijapur in Baroda. Most houses there had a wheel but none plied it. They would start again, but had to be supplied with cotton slivers. Neither Gandhiji nor his associates at the time had any knowledge of processing cotton and it was only after further quest that some idea of it could be got. A start was, however, made with mill-slivers.

"While these developments were taking place at Vijapur, the spinning wheel gained a rapid footing in the Ashram. Maganlal Gandhi, by bringing to bear all his splendid mechanical talent on the wheel, made many improvements in it, and wheels and their accessories began to be manufactured at the Ashram. The first piece of Khadi manufactured in the Ashram cost 17 annas per yard. I did not hestitate to commend this very coarse Khadi at that rate to friends, who willingly paid the price."

By 1921 Khadi began to be produced and worn. The All India Congress Committee met at Bezwada at the end of March, 1922 and passed a resolution urging the collection of one crore of rupees by the enlistment of one crore of Congress members and the manufacture and working of twenty lakhs charkhas. At Bezwada he made two discoveries; first, that the Pinjaris were a sect amongst Musalmans who pursued the profession of carding and, and secondly, that this case was prevalent in Andhra where the Hindu women of certain agricultural classes not only preserved the craft of spinning intact but also were able to make slivers and were getting Khaddar hand-woven with hand-spun yarn, the yarn being spun with slivers carded by the women. In other words,

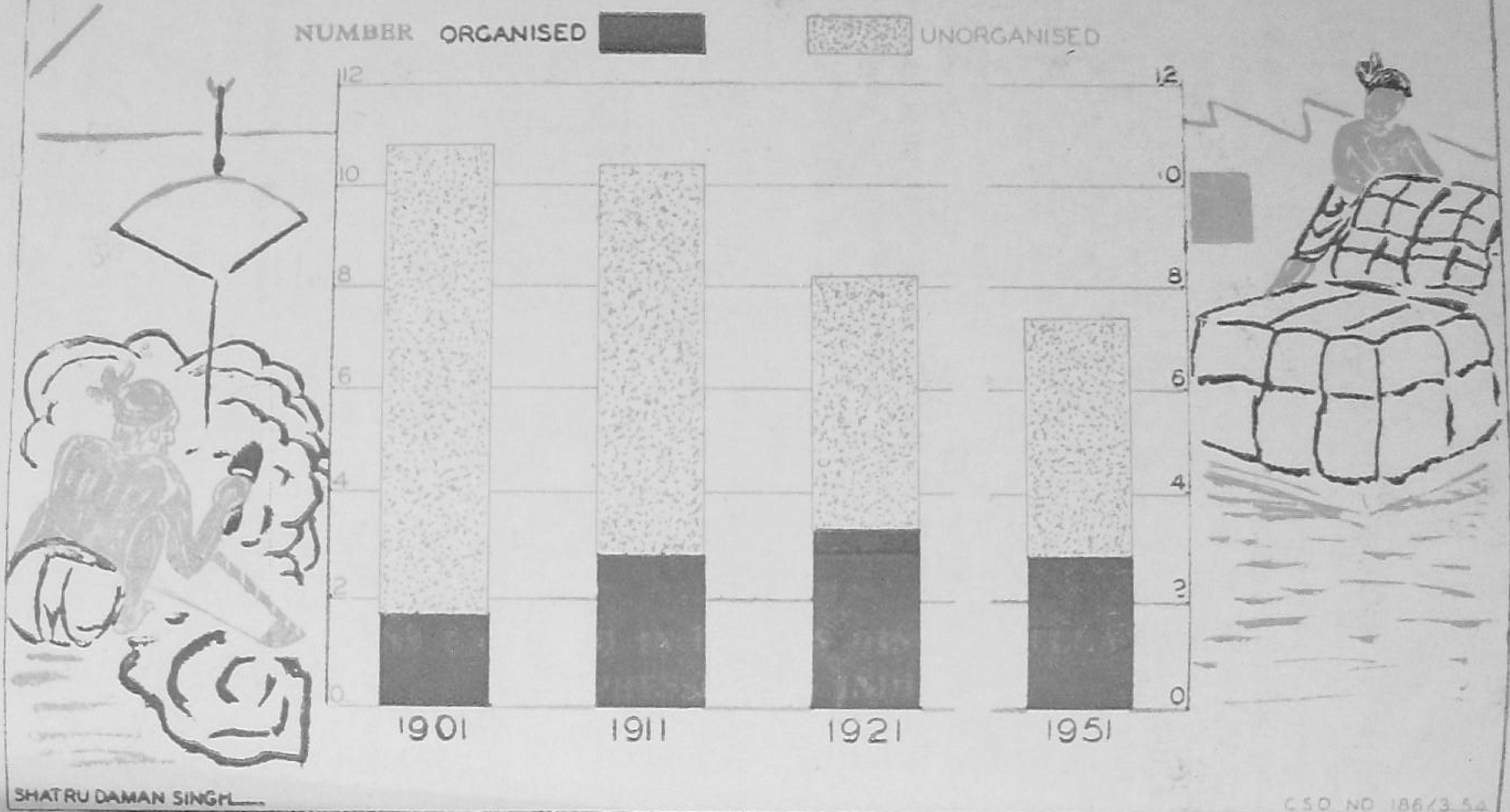
he discovered at Bezwada that in Andhra, women grew cotton in their back-yards, cleaned and carded it, and spun with the slivers so prepared on their own charkhas made decades previously and preserved in the villages as heirlooms. It was further discovered that in Andhra there prevailed an ancient custom of presenting to brides at marriages fine Charkhas as marriage gifts. In fact, in Andhra the marriage customs required a yoke to be placed on the necks of the bride and the bridegroom and a Charka to be presented to the bride—as if to show that they were to plough the land and spin the yarn and figuratively to work as a team. Gandhiji was elated with joy when he made this discovery and it confirmed his definition of Khaddar. Khadi wearing became a primary condition for Congressmen and as the tempo of the non-co-operation movement rose, the impetus to Khadi also grew. Khadi, in the words of Jawaharlal Nehru, thus became "THE LIVERY OF FREEDOM."

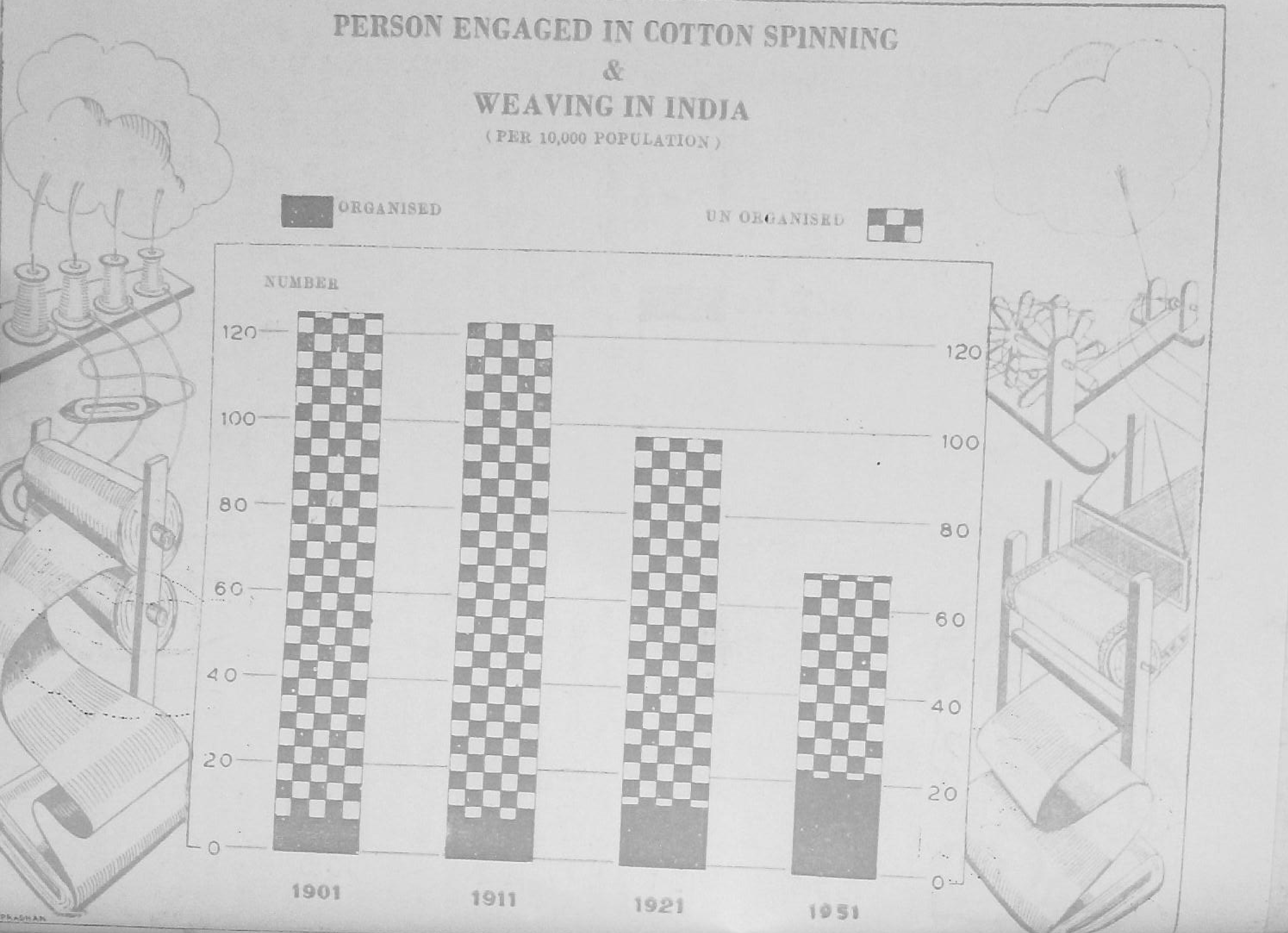
The roots of the Charkha are in the concept of Swadeshi. For, as Gandhiji has written, "Swadeshi is that spirit in us which restricts us to the use and service of our immediate surroundings to the exclusion of the more remote. Swadeshi is the law of laws enjoined by the present age. Spiritual laws, like nature's laws, need no enacting; they are selfacting. But through ignorance or other causes man often neglects or disobeys them. The Law of Swadeshi is ingrained in the basic nature of man, but it has today sunk into oblivion." And again, "What is the kind of service,' I asked myself, 'that the teeming millions of India most need at the present time, that can be easily understood and appreciated by all, that is easy to perform and will at the same time enable the millions of our semi-starved countrymen to live ?', and the reply came that it is the universalization of Khadi or the spinning wheel alone that can fulfil these conditions. I want to claim that the message of the spinning wheel and Khadi is a supremely spiritual message and since it is a supremely spiritual message, it is also full of tremendous economic and political consequences for this country. For, the principles of religion to be worth anything have to be capable of being applied in the realm of economics and economics to be worth anything must incorporate the dictates of religion and the human spirit. Therefore, in this scheme, where economics is fully influenced by religion, there is no room left for the exploiter."

As early as 1924, Gandhiji had claimed the following merits for hand-spinning :

PERSONS ENGAGED IN COTTON GINNING, CLEANING & PRESSING IN INDIA

(Per 10,000 Population)




PERSON ENGAGED IN COTTON SPINNING
&
WEAVING IN INDIA
(PER 10,000 POPULATION)
ORGANISED
UN ORGANISED
NUMBER
120
100
80
60
40
20
0
1901
1911
1921
1951
PRADHAN

1. It could supply the readiest occupation to those who had leisure and were in need of a few coppers.

2. It was known to many.

3. It was easily learnt.

4. The outlay of capital that it required was practically nil.

5. The wheel could be easily and cheaply made.

6. It afforded immediate relief in times of famine and scarcity.

7. It distributed crores of rupees to the deserving poor.

8. Any small increase in its use and appeal meant so much of immediate gain to the people.

9. It was a very powerful medium through which people could be induced to resort to co-operative effort.

10. It filled the villager with new hope for a new life. It could feed millions of hungry mouths. It alone could bring us in touch and in tune with the villager.

11. It is not poverty that matters so much as idleness. Idleness is the root cause of all evil. For millions of people, the winter of despair could be turned into the sunshine of hope only through the life-giving CHARKHA.

The Khadi movement started as part of the Congress movement and functioned within its orbit and framework. Production and sale of Khadi was undertaken by the Working Committee. This activity was started in 1921 with a capital of Rs. 3,00,000/-. This was the period of the rising tide of the non-co-operation movement and Khadi became the symbol of patriotism and of the will to sacrifice. Thus it caught the imagination of the people and by 1923 investment in Khadi rose to Rs. 23,00,000/-. As the work in this direction began to extend Congress Committees set up separate departments for conducting it. Several Pradesh Committees had their own Khadi Boards. Towards the end of 1923, the Congress set up an All India Khadi Board under whose guidance the Pradesh Boards functioned.

Political developments inside the Congress soon began to effect efficie and disinterested work in the propagation of Khadi and a general feeling gre among those who were devoted to it that a separate body engaged only in th organisation and development of the Khadi industry could produce bett results. Accordingly, in September 1925 the All India Congress Committe decided to set up an independent body which, though an integral part of th All India Congress, would function with complete autonomy. This body wa known as the All India Spinner's Association. The assets and funds of th All India Khadi Board and the Pradesh Boards were made over to this nev body.

"The work of the Charkha Sangh can be divided into three periods from the point of view of the special emphasis laid by it on the different aspects of the Charkha. Though general attention on all the aspects was maintained throughout, each period marks a distinct progress in one or other of these aspects of the Charkha. Upto 1933 Khadi work was more or less of a commercial nature, affording relief to the poor. Then came the second period which extended upto 1943. During this period, the idea of paying a living wage was introduced into the work. This initiated a series of experiments in the field of moral economics. After 1944, the third phase started. The emphasis, in this phase, came to be on the Charkha as the symbol of Truth and Non-violence, of Self-sufficiency in the essential needs of living and of the concepts of bread-labour and social and economic equality."

In the first ten years, 1925-1935, its activity centered round the propagation, production and sale of Khadi. The commercial aspect predominated. The primary object was to spread the activity as wide as possible so that the widest possible employment to the needy, the destitute and the lost in the rural population could be made available. This had the desired effect in that better varieties of Khadi began to be produced and those who worked for wages found out better and more efficient modes of production by improvements in their implements. Most of Khadi produced was being sold in the cities and towns and the tastes of the people there required newer innovations. Finer Khadi in myriad designs and colours came to the market.

As Khadi became popular, private agencies began to intrude into the life of the village poor. These agencies exploited the cheap and destitute labour and engaged in profiteering. The basic object associated with the Spinning Wheel and Khadi as the symbol of a new way of life and thought, of social and economic

equality, of virtuous and moral living, receded farther and farther away. In 1933 one crore square yards of Khadi was produced, but it brought little consolation to Gandhiji. The moral basis of the movement was being sacrificed in commercial rivalries. While this expansion showed the enormity of the poverty of the rural population and its readiness to take to any occupation which supplemented their incomes even by a fractional degree, the exploitation of this poverty for private profiteering was a disturbing factor.

If Khadi had any meaning and purpose as the vehicle of rural welfare and progress, this exploitation had to stop. The aim of the Charkha Sangh was not only to provide relief to the poor and unemployed villagers by giving them employment, but also to attract the patriotic attention of the towns people to constructive work and to make them realise their responsibility to promote the welfare of the villagers. A new orientation to Khadi work was necessary and a new concept of its character brought into play. The Khadi worker had henceforward to be the friend, philosopher and guide of the villagers. He should enter into the life of the villagers, understand their problems and find solutions for them. The Spinner should not be subjected to sweated labour; the Spinner should get a fair or living wage. From this point started the next phase of the All India Spinners' Association.

Before we proceed to narrate that phase, it will be interesting to note the progress made by Khadi during the ten years, 1925 to 1935. The tables below are eloquent :—

Year	Production in Rupees.	Production in Square Yards.	Sales in Rupees.
1924-25	19,03,034		33,61,061
1925-26	23,77,670		29,99,143
1926-27	24,06,370	2,29,56,140	33,48,794
1927-28	24,16,382	62,61,812	33,08,634
1928-29	31,55,437	1,16,76,930	39,49,077
1929-30	54,11,610	1,75,76,576	66,99,813
1930-31	72,15,402	1,15,06,883	90,94,132
1931-32	44,78,195	1,02,24,344	58,12,537
1933	38,68,810	95,80,986	51,75,926
1934	34,06,380	85,61,737	46,67,125
[illegible]	22,44,105		46,90,013

Wages distributed during this period are shown in the following table :–

Year	For Spinners in Rupees.	For Weavers in Rupees.	Others in Rupees.	Total
1924–28	22,02,540	22,75,614	2,27,560	45,05,714
1928–29	7,11,833	8,35,156	14,662	16,41,651
1929 30	13,88,469	13,80,475	1,12,206	29,61,150
1930 31	14,44,908	17,95,121	3,60,772	36,00,801
1932	11,03,351	12,76,611	2,69,231	26,49,193
1933	8,35,727	7,47,727	2,78,816	18,62,270
1934	7,57,481	6,69,167	2,72,510	16,99,966
1935	6,80,011	6,77,188	2,91,161	16,48,368

The figures shown in the above two tables are for the All India Spinners Association and its certified centres only. They also show how closely progress of Khadi has followed the political temper in the country.

Another fact to be remembered is that Spinners are part-time workers. Their production and wages, therefore, represent spare time earnings. The spare time is spread over a period of two to three months in a year.

In the year 1935 the All India Spinners' Association accepted the principle of a fair wage for the Spinners and decided that a Spinner should get at least one anna per hour of spinning. Spinners were prepared to work for much less, for, whatever they could earn, be it even a pice was welcome to them. So great was their poverty and want. But the Spinners' Association set the unique example of the employer increasing the wages of his employees on his own volition in spite of the fact that cheaper labour was available in plenty. This is the "KHADI SPIRIT". It signifies the spirit of services of the poor as opposed to their exploitation for private gain. Increased wages meant higher costs of production. The introduction of the fair wage system made Khadi dearer and production gradually had to be curtailed. Khadi produced under the fair wage system alone was pure Khadi and was certified as such by the All India Spinners' Association. This Khadi alone was accepted as the true article by the Congress and all its political prestige and backing was accorded to it. As the figures quoted in the tables above would show, the fortunes of Khadi were closely tied to the fortunes of the Congress.

In September, 1939, the World War broke out. By 1940-41 it had assumed enormous proportions. The period September 1941 to June 1942 saw Khadi, even under the fair wage system, spread in the

country. War shortages gave a fillip to production and in nine months, the All India Spinners' Association and its certified centres alone produced 1,60,00,000 sq. yds of Khadi worth about Rs. 91,00,000/- Khadi work at this period spread out to 15,000 villages and provided work to 3,25,000 part-time spinners, 25,000 weavers and 5,000 other artisans. What is significant is that mill cloth prices began to soar, but Khadi continued to be sold at its fixed prices, so much so that there came a time when Khadi sold cheaper than mill-cloth. Thus, at some places people began to name the Khadi Bhandars as cheap-cloth shops. For the first time it was brought out demonstrably that Khadi represented a higher moral idea, while what the mills produced went to fatten the already rich. The difference between service and self interest was obvious; but it was also evident that given the climate and a spirit of sacrifice, Khadi could not only hold its own, but prepare the ground for a peaceful social change.

War time expansion could have placed the Khadi movement on a strong basis and its services of the poor extended to many, many more villages. But this was not to be. The heavy hand of Governmental repression fell on this purely constructive and productive activity and prominent workers engaged in its organisation were arrested. Khadi centres in certain areas were sequestered and bhandars confiscated and the stocks either looted, burnt or laid to waste. Where this destruction was not wrought, workers engaged in its organisation were otherwise put under restraint or sent to jail. This created a sense of insecurity and unsettled conditions prevailed. Production and sales were adversely affected.

The following tables speak about the progress of the Khadi movement during the ten years, 1935-45 :—

Year	Production in Rupees	Production in Sq. Yds.	Sales in Rupees
1936	24,28,257	62,32,697	34,47,741
1937	30,15,639	72,69,877	45,32,721
1938	54,99,486	1,25,59,594	54,78,720
1939	48,29,610	1,08,95,608	64,13,002
1940	51,36,983	95,11,438	77,62,750
1941-42	1,20,02,430	2,15,84,076	1,49,85,513
1942-43	78,62,368	1,00,45,214	1,07,90,410
1943-44	1,27,52,233	1,08,80,739	1,32,61,642
1944-45	1,34,58,069	1,02,63,903	1,67,87,970
1945-46	70,63,219	52,76,995	1,04,86,530

Wages distributed during the period are shown in the following table :—

Year	To Spinners Rs.	To Weavers Rs.	To other labourers Rs.	Total amount distributed Rs.
1936	9,22,624	5,22,176	2,42,425	16,87,225
1937	12,19,256	6,97,827	3,01,533	22,18,626
1938	23,54,906	12,18,803	5,77,131	41,50,840
1939	20,23,650	10,98,878	5,52,205	36,74,733
1940	20,90,378	10,81,454	5,16,311	36,88,143
1941-42	46,30,273	24,31,733	10,50,987	81,12,993
1942-43	22,45,934	14,41,668	5,32,054	42,19,656
1943-44	41,86,488	26,79,969	9,17,869	77,84,316
1944-45	36,41,671	31,29,711	9,92,151	77,63,533
1945-46	25,08,042	20,61,583	6,10,826	51,80,451

In 1945, the whole concept of Khadi work was revolutionised. "Instead of depending on organisations that could be destroyed, the Charkha should find its own place in every home. Instead of the spinning wheel being plied ordinarily for wages, it should be plied with a view to self-sufficiency in cloth and with a full understanding of the implications of spinning." The Khadi worker had to play a new role and equip himself for it. Khadi was to be integrated with the economic activity of the whole village. Production policy was orientated to the achievement of self-sufficiency. "Spin knowing the full implications of spinning. Let all those who spin wear Khadi and let no one who wears Khadi fail to Spin" said Gandhiji. And the spinner had to do all the processes from picking cotton to slivering. The emphasis was on Samagra Seva, that is, all round service.

After the reorientation of the work of Charkha Sangh, purchasers had to pay a part of the price of Khadi in hand-spun yarn. Many Congressmen resented this and used to argue with Gandhiji that since Khadi-wearing was compulsory for Congressmen, the Charkha Sangh would not allow Khadi to be sold unless a portion of the price was paid in yarn, and since the wearing of uncertified Khadi was taboo, it all boiled down to a sort of compulsion on Congressmen to spin. To this, Gandhiji replied : "That action alone can be compulsion where there is penalty for refusing to do a particular thing. There is always some condition or other attached to membership in any institution. It is no

compulsion, if subsequently, any change is made in such conditions. The case of uncertified Khadi is similar. The only questions to be considered are whether the change fulfils the object, is in keeping with the principles of Truth and Non-violence and is actuated by selfish or benevolent motives. The answer to all these questions will show that the change was to fulfil the original objects, and the question of compulsion dees not arise."

This phase may be said to have continued till 1953 when the All-India Khadi and Village Industries Board was constituted by the Government of India. The All-India Spinners' Association merged with the Sarva Seva Sangh and the bulk of its work of production for sale was taken over by the Board. The period of Samagra Seva introduced in the fields of rural reconstruction a new ideology. The programme must be comprehensive and should embrace all aspects of village life and should be executed in union. One aspect should not be isolated from the others. It was the beacon for the future planners of the Indian Welfare State.

Indeed, the question of planned development of rural economy has been engaging the attention of the All-India Spinners' Association. As a result of the British Cabinet Mission's visit to India and the negotiations it carried on with the Congress, it became clear that transfer of Power in India was imminent. The All-India Spinners' Association, under the guidance of Mahatma Gandhi, took stock of the situation in the prospective of the changes that were taking place, reviewed its work during the twenty years of its operations and formulated certain basic principles which should govern the development of Khadi work in the country under Swaraj. The Association incorporated these principles in its resolution passed in October, 1946. This resolution among other things stated :—

"The experience gained by the All India Spinners' Association has brought the conviction that India and other countries like Malaya, Indonesia etc., where acute shortage of cloth is felt, could become self-sufficient in cloth through hand-spinning and hand-weaving. India is the one country where, from ancient times, hand-spun and hand-woven Khadi was being produced and, even inspite of the rise of the mill industry in the country, genuine Khadi is still produced through the activities of the Association. During twenty years of its activities, the Association has been able to distribute seven crores of rupees as wages to hand-spinners and hand-weavers.

"A government which accepts economic importance of village industries and wishes to undertake their promotion, must necessarily base its policy on the following precepts :—

(a) In every primary, middle and normal school, instruction in hand-spinning should form an important part of the curriculum. Each such school should have a handloom to weave the hand-spun yarn. Speedy action is necessary to introduce Basic Education in these Schools.

(b) Rural development schemes be organised through multipurpose co-operative societies and must centre round Khadi work.

(c) So organise cotton cultivation that hand-spinners could have easy access to it. Cotton and implements be made available to them on easy terms and at subsidised prices.

(d) Research and training of Khadi workers.

(e) In village uplift work, hand-spinning will inevitably come up in one form or other. It is, therefore, necessary to restrict recruitment to the Co-operative, Education and Agricultural departments of the Central and State Governments and of employees of District and Local Boards and Panchayats to those who have passed the Khadi Pravesh Examination.

(f) Price control on handloom cloth.

(g) Protection of certified Khadi by banning sale of production of other cloth under the name of Khadi.

(h) State purchase of textiles be restricted to the handspun cloth. And, handspinning and handweaving be introducod in the prisons.

(i) Non-supply of mill cloth or mill-spun yarn to areas where self-sufficiency is possible with hand spun and handwoven Khadi. Action in this regard may be taken in consultation with the Association.

(j) Besides, the non-expansion of the present productive capacity of the mills by the installation of new spindles and looms and prevention

of starting of new mills. Mills to adjust their production in accordance with policies determined by the Government and the Association.

(k) Complete ban on imports of foreign yarn and cloth."

Since, then the National Government has been established and popular Ministers function in the Centre and the States. The All India Spinners' Association took stock of the situation again and reconsidered the resolution of October, 1946 and modified the policies enunciated there in and adumberated a five-year plan for khadi and laid down certain criteria for its successful implementation.

The Association was of the opinion that if developmental programmes are undertaken and worked on those lines, the following results could be achieved at the end of the five-year period.

1. There would be 75 lacs spinners. Working eight hours a day they would produce 150 crores of square yards of Khadi; but if they work only for one hour a day, 20 crores square yards of cloth would be produced.
2. Khadi work would have spread into 100,000 villages.
3. 45,000 schools would have introduced instruction in Hand-spinning.
4. 7,000 Khadi workers would be engaged in the village work.
5. Besides these, some 50 to 60 thousand others would also be gainfully employed.
6. Khadi production would be increased to the value of 25 crores of rupees.

The total cost of the plan would not exceed 40 crores of rupees. The investment would produce far-reaching social results. Alongside the progress of Khadi work would also grow a certain self-confidence and sense of security in the rural population which are great stabilising forces in a disturbed and uncertain social conditions.

The state of Khadi production during the period 1945-51 is shown in the following table :—

Year	Production in Rupees	Production in Sq. yards	Sales in Rupees.
1946-47	1,05,68,870	70,05,473	1,11,95,131
1947-48	65,74,689	43,51,646	72,46,604
1948-49	1,04,42,965	69,33,948	91,41,412
1949-50	1,11,40,936	71,59,407	1,34,50,166
1950-51	1,27,45,295	72,88,701	1,64,98,678

The following table shows how wages were distributed :—

Year	To Spinners Rs.	To Weavers Rs.	To other Labourers Rs.	Total amount distributed Rs.
1946-47	31,67,303	29,40,774	8,09,139	59,17,216
1947-48	18,11,360	13.20,127	4,63,939	45,95,426
1948-49	27,69,237	25,76,439	5,34,490	58,80,166
1949 50	30,31,828	30,02 313	6,96,891	67,31,032
1950-51	35,04,488	31,16,271	6,73,769	72,94,528

It is evident from the figures that the self-sufficiency programme was not reflected in terms of production and consumption. The level of production and sales was kept up by the political changes that took place in this period.

Free India has accorded a place of importance to Khadi by placing its development in the hands of its devotees who have been brought together in the All India Khadi and Village Industries Board. Khadi now receives a subsidy to the extent of the overhead charges that are to be included in the price of cloth which come to three annas in the rupee. This amount is returned to the consumer as rebate in order to encourage larger sales and wider use of Khadi by the people, and thus give an incentive for expansion of production programmes.

Here it will be interesting to compare the distribution of every rupee worth of mill cloth and hand-spun and hand-woven Khadi. According to the Mill-

owners Association "out of every rupee representing the income of cotton mill company, wages and salaries amount to about four annas." On the other hand in every rupee of Khadi produced wages alone come to ten annas six pies. Over-head charges, that is expenditures involved in the purchase of cotton, supplying it to the spinners, collecting the yarn and supplying it to the weavers and then gathering and marketing the cloth, come to three annas. It is clear that there is no wasteful expenditure or intermediary profiteering in the Khadi industry. Nearly two-thirds in the rupee is actually distributed as wages. The 24-36 per cent which is entered by the mill industry against its wage bill does not represent the basic wage of the workers. It is very much less.

Higher earnings will be possible for the handspinners if certain facilities are extended to them. An improved Charkha, supply of cheap cotton, assurance of continuous employment and ready disposal of the yarn produced and a certain organisation and training towards higher productivity with traditional implements, can all go a long way in making this increased earning possible. At the same time, institutions engaged in the production of Khadi should also have the assurance of a ready market for all the cloth produced and of reasonable aids to augment their working capital. Once they are assured of these, they will take to expansion. In order that the quality of Khadi improves with expansion of production, incentives have to be created. Periodical exhibi-tions setting up of emporia in important centres and state purchase and preference can provide them.

The Board has, therefore, evolved programmes for the development of the Khadi Industry on a systematic and planned basis. The plan includes organisa-tion of training centres and a central research institute with field units. The research will mainly be developmental and will be based on local materials. The object is to effect technical improvements in the traditional appliances to enable increased productivity. Increased productivity will automatically lead to increased returns at lesser costs. Its schemes also include financing of production centres on easy terms, supply of raw materials at fair prices, advances on stocks and aid in marketing.

The Board budgetted in 1953-54 for Khadi production worth three crores of rupees to be worked out through the existing Khadi producing organisations as well as through new centres to be started in the year. In the year 1951-52, there was Khadi production to the extent of Rs. 1,68,77,693/-. through the

Charkha Sangh and its certified institutions. Besides this, there was production worth 35 lacs of rupees at the Madras Government Centres. Uncertified institutions also produce appreciable quantity of handspun yarn to produce adulterated Khadi. In Andhra, Karnatak, Punjab, Rajasthan and Kashmir there is a large scope for increasing Khadi production. It is possible to start Khadi centres in the colonies of displaced persons and in famine areas also.

The Board began its activities in the direction of Khadi production through the All India Spinners' Association and its certified institutions. In the year 1951-52, sales of Khadi produced through these centres amounted to Rs. 1,49,56,000/-. During the course of the year, the Board took over all production centres in Andhra and has made arrangements to assume control over the Centres in Kashmir. In the new production centres, the rate of consumption of the artisans can be increased gradually to the extent of 12 to 25 per cent of the total production. With an anticipated consumer demand for Rs. 1½ crores and about Rs. 50,000/- from producer artisans Rs. 1,00,00,000. worth of Khadi would be left over. The Board proposed that this one crore of rupees worth of Khadi should be bought by the Government. It can be stated that the sale of Khadi worth one crore rupees can easily be affected to the Central and State Governments, Posts, Telegraphs and Railway Departments.

Total production, however, in 1953 did not exceed Khadi worth Rs. 1,35,97,000 though it was much higher than that of 1952 which showed the figure of Rs. 70,96,500 in 1952. Total sales for the same period were Rs. 1,52,01,000 as against Rs. 1,38,10,000 while production showed an increase of 91.6% in 1953 over that of the previous year's sales recorded a rise of only 9.3%. The sales figure does not include state purchase. Government inquiries placed with the Board hold out the hope that its expectations will be fulfilled. These are to the tune of Rs. 62,00,000/-.

For the year 1954-55 the Board has budgetted for a total amount of nearly five crores of rupees. The Budget is based on the assumption that Khadi production will rise to the value of Rs. 4,40,00,000 and a sale of like amount. A new feature of the programme is the start made in the development of the woollen blankets industry and Khadi production in centres directly organised by the Board. This production is expected to be of the value of Rs. 60,00,000. The value of the woollen blankets production is estimated at Rs. 40,00,000. The budgetted amount will be allotted as under :

Rs. 1,01,00,000/-. for subsidies which include a rebate at three annas per rupee as commission of agency sale, VASTHRA SWAWA LAMBAN, and implements : grants to institutions on their increased production and sale to meet the loss in the price reduction, increased expenditure for opening new centres etc., and grants to 30 intensive centres at Rs. 20,000/-. each. Three lacs of rupees will be spent on Research, and other expenditure which include exhibitions, training in Khadi, competitions and prize awards etc., come to 46,50,000/-.

But what place Khadi will have in the economy of Free India will depend on the type of democracy and social structure the people will work for. The universal adoption of Khadi for all the clothing needs of the Indian people will mean the introduction of the Charkha in every home. When this happens India will be pulsating with a new life. A new awareness of the wasted productive capacity of the people will give a new turn to the rural economic organisation. Thus to ply the wheel for wages would impel the necessity for improved implements and improved quality of yarn. This by turn introduces into the life of the inert masses a certain productive activity and gives to them a certain art and skill which, apart from giving them a supplementary income, makes them conscious of the importance of productive work in meeting the necessaries of their own lives. To the extent that this consciousness grows, to that extent will the masses become self-reliant and develop self-confidence. A social environment surcharged with this spirit of self-reliance and self-confidence becomes an environment of invulnerable strength. And, after all, a nation is judged not by the number of machines and factories it contains, but from the basic strength and confidence of its people. If the spinning wheel and other village industries could give to the masses of our people this strength, that will constitute a great advance in the march of Free India towards the attainment of her destiny in the comity of nations in the world. A nation of hungry mouths and empty stomachs is never stable and nurtures within itself the instruments of its own ruin.

In a consideration of the economic development plans for India, the essential character of its economy should be reorganised. The central problem of Indian economy is under-development, both relative and absolute, and its universal unbalance. The result is great deterrent to progress. Absolute under-development is reflected in the utter poverty of the people, their subhuman living standards and denial to them even of basic minimum necessities of life. Relative under development tells the same sordid tale. The per capita

national income is an index of this. According to Dr. V.K.R.V. Rao, 10% of the urban population received 50% while 48% of the land-holders received only 9% of the national income. The enormity of the inequality becomes more pronounced when it is known that 65% of the population which constitutes the 'Peasant Class' does not receive more than 25% of the income. Planning for the rural areas, therefore, should aim at the levelling up of rural incomes so that this collosal disparity in the distribution of the National income can be righted.

Moreover, as Khadi work develops, a wide field will also be thrown open for the development of other village industries. Gandhiji had described the Charkha as the Sun of the Village Solar System round which the other planets which are village industries, revolved. Development of village industries was essential for the growth of the Khadi industry in the same way as Khadi was necessary for the sustenance of the other industries. Working with readily and locally available raw materials and with implements suited to the local skills and resources of the people, these would be complementary to agriculture. The perspective of an integrated village planning thus opens up. Exchange of goods and services are not unknown to our village communities and there is no reason why this spirit cannot be revived to enrich their lives and for the national weal.

There is no royal road to the Welfare State and an egalitarian society based on social justice and equity. Without a spirit of sacrifice and willingness to subordinate individual gain to the national good, the object cannot be achieved. The organised industrial sector will have *per force* to accept certain limitations and sacrifices and set the moral tone for the evolution of human values as the basis of national development. At all events, the employment potential that this industry presents will weigh with social and economic planners in giving to it a privileged and protected place in the scheme of national reconstruction and consolidation. The five-year khadi programme provides for a production figure of 25 crores of rupees at the end of the fifth year. When this target is reached, the Khadi industry alone will have provided part-time employment to 30 lakhs of new spinners and full employment to over 26 lakhs more at a nominal capital oulay.

Still, however, there are people in our midst who never tire of saying that Khadi was our weapon against foreign rule. Now that India is free, why should we insist on wearing Khadi ? Industrially backward as the country is, the Nation's energies and resources should be directed to speedy industrialisation.

Has Khadi, then, no place in India ? Has it no significance on the reconstruction of Indian democracy ?

Gandhiji himself has answered the questions in these words : "We were trying through Khadi to place man above the machine rather than allow the machinery driven by electricity or steam, to be the master. We were endeavouring through Khadi to establish equality between man and man in place of the enormous inequality now existing between the poor and the rich, between the high and the low, between the man and the woman. We also endeavoured to make the labourer independent of the capitalist instead of the capitalist exploiting labour and assuming undue prestige. If, therefore, what we did in India during the last thirty years was not wrong, we should now carry on the programme of the spinning wheel with all its allied activities with more understanding of all the implications and with greater vigour."

The State has shown its interest in the development of the Khadi industry and has accorded it a prominent place in the Nation's Plan. It has shown its preference to Khadi by the subsidies it is giving to the extent of sales establishment costs. But that is not enough. What was the "livery of freedom" during the period of our national struggle, must, under freedom, be the uniform of the State. Without State Patronage and bounty, Khadi cannot come into its own. Even organised machine industry in India has to depend on State protection by preferential tariffs for their existence. "Cloth, iron and sugar made in factories," wrote Gandhiji, "needed State Aid in some form or other to withstand foreign competition." How much more so is the justification for such aid in the case of Khadi and other articles produced by village industries ? " To quote Gandhiji again, "In the open market a more organised industry will always be able to drive out a less organised one, much more so when the former is assisted by bounties and can command unlimited capital and can, therefore, afford to sell its manufactures at a temporary loss."

In many countries, there are schemes of social security which protect all citizens against unemployment. In India, when schemes of social security are devised, we think mostly in terms of industrial labour employed in large-scale industries or other large-scale enterprises. But the number of such industrial workers is relatively small, a large mass of our manual workers being engaged in the agricultural industry, for whom and for whose families under-employment and partial employment are not a residual problem, but are a constant night-mare. To devise schemes of social security for one section of workers and

not for others would be unjustifiable discrimination and would obviously be against the interests of National solidarity. To provide against unemployment in rural areas is, however, a tremendous financial undertaking, practically beyond the capacity of the Central or State Governments to undertake. In the circumstances the revival of Khadi offers, as Mahatma Gandhi claimed, the only solution.

CHAPTER III

VILLAGE OIL INDUSTRY

India is one of the most important producers of oilseeds in the world and is consequently a large producer of vegetable oils. The total world production of important oilseeds is estimated at about 35 million tons per annum. Of this India produces nearly 5 million tons. Some of the other countries which are large producers of oilseeds are China—Manchuria, U.S.A., USSR and Argentina. The important oilseeds which India produces are groundnut, castor, linseed, sesamum, mustard and cottonseed. Except for cottonseed, the crushing of which is not yet developed, all the other oilseeds are used for the extraction of oils.

I. Supply and utilisation of oilseeds and oils

There has been a significant growth in the cultivation and production of oilseeds in recent years to meet the increasing requirements of the country. The growth has been particularly significant in respect of groundnuts, the area under cultivation and the production of which has shown a remarkable upward trend. At present groundnuts account for nearly 60 per cent of the total production of oilseeds in the country. The table given below would indicate the production of major oilseeds in recent years.

Estimated production of oilseeds

(thousand tons)

	1949-50	1950-51	1951-52	1952-53
Groundnut	3,379	3,426	3,045	2,894
Castor seed	128	103	105	107
Sesamum	431	438	438	451
Rape and Mustard	793	750	916	828
Linseed	411	361	316	355
Total	5,142	5,078	4,820	4,635

The slight decline in the production of oilseeds during the last two years is attributed primarily to the fall in the production of groundnuts caused by bad seasonal conditions in the groundnut areas.

The extraction of oils is the most single important use to which oilseeds are put. A small percentage of the total production goes for direct consumption, exports and as seeds for cultivation. The extent of such uses varies with various oilseeds. After these demands are met, the remaining quantity of oilseeds could be presumed to be crushed for the extraction of oils by mills and ghanis. The production of major oils in recent years is indicated below :—

Estimated production of oils

(*thousand tons*)

	1950-51	1951-52	1952-53
Groundnut	748	662	628
Castor	7	37	36
Sesamum	136	135	140
Rape and Mustard	221	275	247
Linseed	83	89	103
Total ...	1,195	1,198	1,154

In addition to these oils, on an average 114,000 tons of coconut oil are estimated to be produced per annum. It would be observed that the production of oils has generally followed the production pattern of oilseeds.

The utilisation of oils could generally be brought under three definite heads: (i) direct human consumption, (ii) industrial purposes and (iii) exports. The industrial utilisation of oils is a somewhat recent development which is likely to consume increasing quantities of oils with the progress in the industrial development of the country. The oil consuming industries which have registered significant development during the last few decades are vanaspati, soap, paints and varnishes. The export of oils has been much encouraged as an important source of earning foreign exchange. However, the bulk of oils produced in the country goes for direct human consumption. Any development envisaged in the field of oil production has to recognise the trends in these three major spheres of utilisation. The table below would indicate the estimated quantities of oils available for direct human consumption after allowing for exports and industrial utilisation.

Utilisation of oils

(thousands tons)

	Production	Industrial consumption *Vanaspati	Industrial consumption others	Exports	Oils available for edible purposes
1950-51	1,195	170	118	120	957
1951-52	1,198	200	125	89	984
1952-53	1,154	240	125	133	896

If about 114,000 tons of coconut oils are also taken into account, the quantity of oils available for edible purposes would be of the order of 1.0 to 1.1 million tons.

The pattern of utilisation of different oils for edible and industrial uses in 1949-50 is indicated in the table below :—

Edible and industrial uses of oils

(thousand tons)

	Groundnut	Rape and mustard	Sesamum	Linseed	Castor	Total
1. Edible Purposes	410	218	93	22	—	743
2. Industrial						
(i) Vanaspati	162	—	10	—	25	
(ii) Soap	70	—	16	—		
(iii) Paints	—	—	—	45		
(iv) Other purposes	—	13	5	7		
Total	232	13	31	52	25	353
Grand Total	642	231	124	74	25	1096

It could be presumed that the proportions of utilisation of different oils for edible and non-edible purposes has not undergone any substantial change from what is indicated in the above table. It would be evident that the entire quantity of castor and a substantial proportion of linseed oils are used for industrial purposes while, an overwhelming proportion of rape and mustard and sesamum

*The quantity of oils used in the manufacture of vanaspati may be treated as available for edible purposes except for negligible manufacturing losses.

oils are used for edible purposes. In the case of groundnut oil, nearly two-thirds the quantity is used for direct consumption and the rest for industrial uses.

II. Consumption and requirements

On the basis of about 1.0 to 1.1 million tons of vegetable oils being available per annum for the entire population of the country, the average per capita consumption of oils works out to 0.35 ounces per day. This standard of consumption is miserably inadequate compared to international standards. It also falls very short of the minimum per capita consumption of 2 ounces of fats as recommended by the Nutritional Advisory Committee (1946). On the basis of the minimum recommended by this Committee, the total annual requirements of fats of the entire population of the country would come to more than 7 million tons. No doubt, in addition to vegetable oils certain quantity of fats is available to the population through subsidiary resources like ghee and other non-vegetarian food, but it can hardly make up for the wide gap indicated above. Apart from the considerable increase in demand which is likely to develop with the general improvement in the standard of living, the requirements of the industry are also bound to go up in due course. If all these factors are taken into consideration, it is obvious that there exists a very large scope for increasing oil production in the country. This is particularly significant as it affords ample scope for the rehabilitation and development of the ghani industry, provided the capacity of the mill industry is maintained at the existing level as recommended by the Planning Commission.

III. Targets of Production in the Five Year Plan

Although the Five Year Plan recognises the importance of increasing the production of oilseeds, the primary consideration of achieving a certain degree of self-sufficiency in food grains has prevented an ambitions programme in the production of oilseeds being envisaged in the First Five Year Plan. The Plan has, however, provided a moderate increase of four lakh tons in the production of oilseeds over the 1950-51 level. The target has been fixed in such a manner as to provide adequate quantity of oilseeds for the additional requirements of oils for industrial expansion envisaged in the Plan as well as to meet the consumption needs of the increasing population at the existing level. The quantity of oils required to meet the needs of the additional population during the period of the Plan at the present level of consumption is expected to be about 70,000 tons. In addition, the industrial requirements of oils excluding that of Vanaspati are expected to go up by 100,000 tons during the same period. The Plan further provides for

maintaining the existing level of exports. The total additional demand for oil during the period of the Plan is thus likely to be 170,000 tons per annum which is proposed to be obtained from the additional production of oilseeds. In spite of the temporary fall in the production of oilseeds due to bad seasonal conditions, it should be anticipated that the target of the Plan would be attained by 1955-56.

IV. Brief survey of the industry

Oil extraction is traditionally carried on in villages through ghanis which are spread all over the country. The total number of such ghanis is not accurately known but it is estimated that there are at present about 4 lakh ghanis in India, having a total crushing capacity of nearly 20 lakh tons of oilseeds per annum. The approximate regional distribution of these ghanis is as follows:—

Statewise Distribution of Ghanis

State	Number of Ghanis in 1951	Capacity per annum* in tons in 1951.
West Bengal	N. A.	N. A.
Bombay	11,786	58,930
Madras	2,31,430	11,57,150
Uttar Pradesh	1,33,774	6,68,870
Bihar	N. A.	N. A.
Punjab	2,710	13,550
Madhya Pradesh	12,860	64,300
Delhi	926	4,630
Orissa	N. A.	N. A.
Assam	885	4,425
Vindhya Pradesh	8,996	44,980
Travancore Cochin	N. A.	N. A.
Saurashtra	N. A.	N. A.
PEPSU	2,044	10,220
Rajasthan	N. A.	N. A.
Hyderabad	8,424	42,120
Mysore	2,370	11,850
Total	4,16,205	20,81,025

N. A.=Not available.

*Estimated at 5 tons per annum per ghani.

It would be observed that Madras and Uttar Pradesh between themselves possess about 90% of the total number of ghanis in the country. Against the estimated capacity of 20 lakh tons, the ghanis on an average do not crush more than about 10 lakh tons of seeds per annum.

During recent times the oil industry has increasingly drifted to urban areas, consequent to the development of milling and oil consuming industries in cities and towns. There are about 1000 registered oil mills operating in the country apart from the large number of unregistered mills. The mills are mostly concentrated in Uttar Pradesh, Madras, Bengal and Bombay. The total annual capacity of these mills is estimated to be between 30 to 40 lakh tons of seeds. The mills on an average crush about 20 lakh tons of seeds working from 6 to 7 months in the year. In view of the enormous capacity for oil crushing both in the organised and rural sectors, mills and ghanis are able to utilise only about 50 per cent of their crushing capacity.

Of the total quantity of oilseeds crushed, the accurate proportion available for ghanis and mills separately is not known. However, certain estimates have been made for the year 1949-50.

Quantity of seeds crushed by mills and ghanis

(*lakh tons*)

Seed	Mills	Ghanis
1. Groundnut	12.00	5.68
2. Mustard and Rape	5.00	1.97
3. Sesamum	0.22	2.46
4. Niger, Kardi	Nil	1.00
5. Linseed	2.60	0.25
6. Castor	0.90	0.10
7. Mahua	0.90	0.10
8. Cottonseed	0.50	Nil
Total	22.12	11.56

It can be assumed that more or less the same relationship holds good at present between the output of oilmills and ghanis. It has to be noted that while ghanis operate mainly for edible oils, mills meet the demands both of edible

oils and industries. Cottonseed is almost exclusively crushed by mills since it is not suitable for ghani crushing.

V. Problems of the Industry

A baffling problem which the development of the mill industry has thrown up for the village ghani is the supply of raw materials. As already pointed out, surplus capacity exists both in the organised and the unorganised sectors of the oil crushing industry and this has led to the severe competition between mills and ghanis for the limited quantity of raw materials available. With the advantage of greater working finance, the mills are able to secure and stock adequate quantities of oilseeds to enable them to operate for considerably longer periods than the ghanis. The village oil industry, on the other hand, has a more or less day to day existence and when the prices of oilseeds go high it becomes impossible for them to compete with mills which procure seeds at a lower price in the season. The competition also leads to speculation and exorbitant prices beyond the reach of the ghani worker.

What is needed is the extension of credit facilities to rural ghanis on a wider scale so that they are able to stock an adequate quantity of seeds to meet their full requirements. On the basis of providing finance to stock at least 5 lakh tons of oilseeds, the quantum of finance required will be of the order of Rs. 30 crores. The possibilities of expanding banking facilities to rural centres and methods to be adopted to make finance available to village industries in adequate measure should be looked into by the Reserve Bank of India or by a committee like the Shroff Committee. In this connection, it is also necessary to point out the desirability of creating an adequate number of godowns in villages which can play a vital role in securing credit facilities to the village artisans whose ability to provide security to financing agencies is limited.

VI. The ghani and the mill

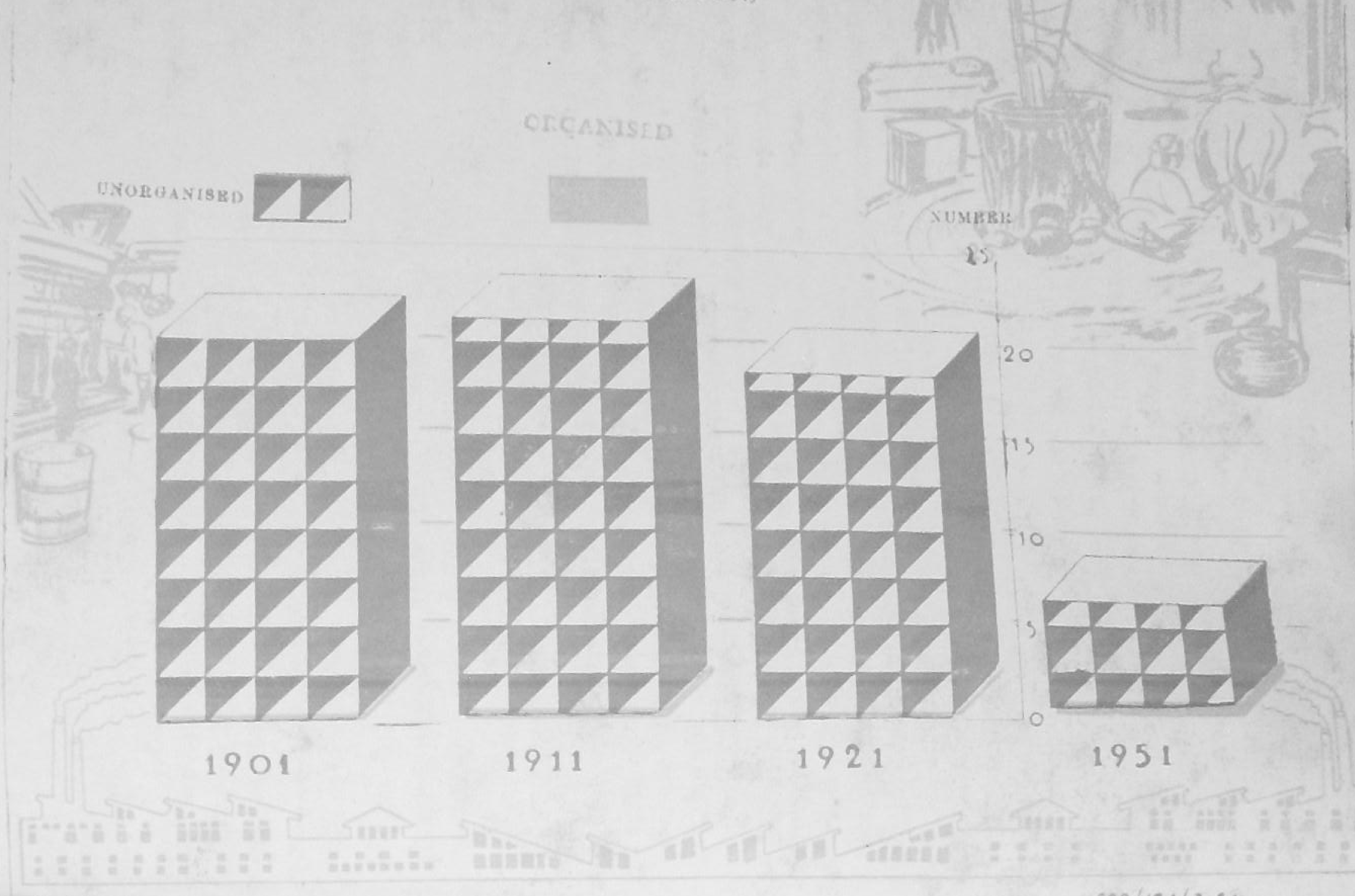
With regard to the controversy on the advantages and disadvantages of mills and ghanis, two major questions that often crop up relate to their bearing on employment and efficiency. While the mills claim a higher efficiency in the extraction of oil, the ghanis lay emphasis on the quality and the enormous number of workers who derive employment from their working.

Employment—A large number of workers derive employment in the extraction of oils. The quantum of employment, however, has shown a steady decline with the

development of the mill industry. According to figures based on the latest census returns, the total number of workers employed in the village industry is of the order of 2 lakhs. This figure may perhaps be an underestimate since for census purposes only such persons are counted for whom oil crushing is the main occupation. Apart from such category of workers, it is likely that oil crushing industry provides part time employment to a large number of agriculturists. Moreover, the village oil industry is a family industry in which members of the family generally lend a helping hand. Since there are about 4 lakh ghanis, the census figure of two lakhs also indicates that a large number of them are now out of production. In any case, there is no doubt that the village oil industry provides gainful employment to a large section of the rural population. The census returns would further indicate that the number of the same type of workers have been steadily decreasing during the last three decades. In 1921, for example, the number of workers employed in the village oil industry had been estimated to be of the order of 5 lakhs. If this figure is compared to that of 1951, the conspicuous decline in the quantum of employment provided by this industry becomes evident. It is also interesting to note that against a decline of nearly 3 lakh workers during 1921-51 in the rural industry, the mill industry has only absorbed about 45,000 additional workers during the same period. It indicates that consequent upon the development of mill industry, this important rural industry has declined to a considerable extent. If we take into account the fact that the large majority of those who have thus been deprived of their traditional employment are workers in villages where considerable unemployment and under-employment already exist, it is easy to visualise how the expansion of oil mills has gone to aggravate this problem in rural areas. Out of this important consideration stems the inevitable necessity to expand this important rural industry through moderate state aid and helpful policies.

Efficiency—The argument often brought forward by the organised sector of the industry is that the continuation of oil ghanis leads to the perpetuation of the wastage of scarce national resources. It is true that the ghanis are not mechanically as efficient as modern power driven expellers. Whereas, on a rough estimate, the ghanis yield 35-36% of oil, the mills are able to extract about 40% oil from seeds. Improved ghanis have, however, bridged this difference to a considerable extent as would be evident from the data given below on oilcontent of cakes obtained from various pressing units analysed in the laboratory of the Harcourt Butler Technological Institute, Cawnpore.

PERSONS ENGAGED IN OIL PRESSING INDUSTRY IN INDIA
(PER 10,000 POPULATION)



A. GHOSH

CSO/184/3.54

Oil content of cakes from different pressing units

Pressing unit	Linseed cake	Mustard cake	Til cake
1. Ordinary teli kolhu driven by bullocks	14.15%	15.16%	14.15%
2. Improved Wardha kolhu driven by bullocks	12.58%*	11.2%	12.54%*
3. Bengal type power driven ghani	11%	10.5-11%	11-12%
4. Bombay type power driven „	11%	10.5%	11%
5. Expellers	7-7.5%	8%	9%
6. Anglo-American or cage type hydraulic presses	8-9%	9%	8%

Moreover, on a broader perspective, the loss may not probably be of such a high order because the overall efficiency of mills is likely to be lower than the figure given above. Reliable statistics are not available about the quantity of seeds lost in transit, but there is no doubt that such loss does occur in transporting seeds particularly smaller sized seeds like til and mustard from villages to towns for mill crushing, whereas the local character of the ghani industry does not suffer from this wastage. Secondly, storage of seeds and oils over a length of time, which is an essential characteristic of the organised industry, also leads to a certain degree of deterioration of seed and loss of oil due to rancidity. It has also to be pointed out that the higher percentage of oil left in the cake is not a waste, since ghani cake provides a richer food for the cattle than the mill cake. There is, however, considerable difference of opinion on this point. It is contended that such a high percentage of oil is not assimilated by the cattle. Research work is now being carried out under the auspices of the Indian Central Oilseeds Committee at the Indian Veterinary Reseach Institute, Izatnagar with the object of finding out the nutritive value of various types of oilcakes produced by ghanis and mills and also the percentage of oil essential in the cake for cattle nurition. Besides, the relative feeding value of cotton seed and cotton seed cake will also be studied. The research programme undertaken at Izatnagar is expected to be completed by 1955 and pending the completion of these investigations, it would not be correct to pass any verdict on this controversy whatever might have been the conclusions reached in other countries.

*Analysed by the Cotton Oil Mill, Navasari, Gujarat,

There are two positive directions in which the loss of oil on account of the lower yield in the traditional ghani is attempted to be counteracted. Firstly measures are adopted to improve the traditional ghani to yeild better results. Considerable research work was undertaken under the auspices of the All India Village Industries Association, Wardha and the Government of Bombay has conducted similar work in improving the design of the ghani. The Wardha ghani has been acknowledged as the best type of ghani in a demonstration organised by the Indian Oilseeds Committee. Thus, gradually, the difference in yield between the mill and the ghani is likely to be narrowed down. Secondly, an attempt is being made in recent years to extract the oil from cake by the solvent extraction process. If, as a result of experiments, it is found feasible and necessary, ghani cake could also be treated by the solvent extraction process with advantage.

The village oil industry further possesses certain advantages over the mill industry. The bulk dealing and long transport of products of the mill industry afford excellent opportunities to unscrupulous elements to indulge in the practice of adulteration of this important item of food with disastrous consequences. Complaints of adulteration of oils have been frequent and numerous. On account of the local character and modest production of ghanis, the chances of such antisocial activities can be minimised. With regard to oil cakes, the production of ghanis, generally, goes for the feeding of cattle, while mill cake to a large extent is used for manurial purposes which admittedly is not the best use to which it could be put in a country where there is considerable shortage of cattle feeds.

VII. Programme of development

(a) *Recommendations by the Planning Commission*—The need for developing ghani industry is widely recognised. The Planning Commission has given thought to the extent to which such development is immediately feasible and the measures that are to be adopted to achieve the same. The Five Year Plan has suggested the extension to the oil crushing industry of the principle of reservation of spheres of production so well adopted in the textile industry. Thus in the oil industry the Planning Commission visualises the adoption of a policy, in which the production of edible oils may largely be reserved for the village industry, leaving the production of non-edible oils to mills.

On the question of the expansion of large scale industries, the Five Year Plan is more categorical. The Plan states that in the sphere of food processing indus-

tries a stage appears to have been reached when further expansion of large scale industry should not be permitted, except under certain conditions such as, for instance, the establishment of units by the Government or by a co-operative organisation. The Plan has further recommended the imposition of a small cess on mill oil for the benefit of the village oil industry.

The Five Year Plan envisages an increase in the crushing of oilseeds by ghani from the estimated figure of 1 million tons in 1950-51, to 1.38 million tons by 1955-56. This increase in crushing by ghanis in proportion to the increased production of oilseeds envisaged in the Plan indicates thereby that the Plan aims at maintaining the present level of crushing by the mill industry.

(b) *Recommendations of the All-India Khadi and Village Industries Board*—After a careful study of the present position of the village oil industry, the All-India Khadi and Village Industries Board has chalked out the following programme of development for this industry and has recommended a number of measures to be adopted for its development.

1. A policy of reserving the production of edible oils through the ghani industry should be announced by Government. As a first step towards the implementation of such a policy, the following measures may be adopted—

(a) In view of the large unutilised crushing capacity both of the oil mills and of the ghanis, no expansion of the capacity of the oil mills should be permitted.

The Government of India have delegated powers to State Governments under the Essential Supplies (Temporary Powers) Act, 1946, for the prevention of indiscriminate establishment of oil mills. In virtue of powers already assumed by Government under the amended Industries Development and Regulation Act, 1951, the establishment of new oil mills should be regulated in such a way that the existing ghani industry does not suffer and the new mills, if any, do not add to the total crushing of oilseeds by oil mills.

(b) To achieve the objective of producing edible oils through ghanis in larger quantities than at present, a ceiling should be fixed for crushing of oilseeds by mills at their present level of crushing. Further steps should be taken to raise the production of edible oils through ghanis from additional agricultural

production of seeds and by diverting edible seeds pressed by mills through replacement by cotton seeds. In order to be able to enforce this ceiling, Government should assume powers through legislation to prevent the oil-mills from crushing beyond a maximum quantity such varieties of oilseeds as are allotted to them by the Government. The Board has recommended the adoption of a production programme for mills and ghanis to be implemented during the remaining period of the Five Year Plan on the following lines.

Production programme for Mills and Ghanis during the Plan period

(in lakh tons)

No.	Seeds	MILLS Present crushing	MILLS Proposed allocation	GHANIS Present crushing	GHANIS Proposed allocation	Additional seeds available to ghanis due to expected increase in production	Total crushing by ghanis
1	2	3	4	5	6	7	8
1	Groundnut	12.00	10.00	5.68	7.68	2.00	9.68
2	Mustard & rape	5.00	4.00	1.97	2.97	0.53	3.50
3	Sesamum	0.22	Nil	2.46	2.68	0.22	2.90
4	Nigar Kardi	Nil	Nil	1.00	1.00	—	1.00
5	Linseed	2.60	2.60	0.25	0.25	—	0.25
6	Castor	0.90	0.90	0.10	0.10	—	0.10
7	Mahua	0.90	0.90	0.10	0.10	—	0.10
8	Cotton Seed	0.50	5.00	—	—	—	—
	Total	22.12	23.40	11.56	14.78	2.75	17.53

(c) Sesamum seed should be immediately reserved for the ghani. Though some quantity of sesamum oil is being used for industrial purposes, the whole of it should be reserved for ghanis, because

being sweet oil, it is in demand all over the country and is in short supply and efforts should be made to avoid its diversion from edible use. This reservation is also necessary to minimise chances of adulteration.

The effective implementation of the programme, would depend a good deal on the development of the cotton seed crushing industry in this country. The Board has gone into the details of this question and has recommended the following main measures to be adopted by the government to facilitiate such development.

(i) Movement of cotton seed outside a producing State to be so regulated as to meet the requirements of genuine crushers.

(ii) Inter-State levies and duties on cotton seed to be abolished.

(iii) Ten per cent of cottonseed oil to be used in the manufacture of Vanaspati by all producers.

(iv) Soap factories to substitute, as far as possible, groundnut oil by cotton seed oil.

(v) Propaganda measures to be adopted to popularise the use of cotton seed cake as cattle feed. At the same time, data to be collected on the nutritive value of cottonseed cake as cattle feed.

2. The Board, having taken into consideration the disparity in the cost of production between mills and ghanis, has further recommended that, in the interests of developing the ghani industry, a cess at the rate of Rs. 1-4-0 should be levied on every maund of oil produced by the mills and the funds thus obtained should be utilised in the development of the ghani industry in the manner suggested below:—

(i) Financial assistance in the stocking of oil seeds and in paying rent for godowns hired for the purpose,

(ii) Subsidising ghani oil;

(iii) Undertaking research for improving the efficiency of the ghani process.

The cess may be collected through the existing agencies. The assistance envisaged above may take the following forms :

(i) Grant of subsidy to the ghani industry at the rate of Rs. 2-8-0 per maund of oil produced provided that the subsidy is made available to the ghanis only through Co-operative Societies or recognised institutions which will ensure that the consumer receives a proportionate reduction in price. This subsidy will not be available to proprietory ghanis coming under the purview of the Factories Act, nor for oils in respect of which there is exclusive reservation of seeds for crushing by ghanis.

(ii) Grant of interest on capital locked up in the stocking of oilseeds for ghanis by Co-operative Societies and recognised institutions and thus remove a major handicap to the full employment of the ghanis throughout the year. This assistance will not, however, be available to privately owned ghanis coming under the purview of the Factories Act.

3. In view of the great importance attached to the stocking and supply of oilseeds to ghanis, the Board has recommended that the various State Governments should be requested to undertake the construction of licensed godowns in rural areas and make them available to the ghani industry for stocking seeds at nominal rents.

4. The Board has viewed with grave concern the hardship experienced by the oil industry in general and the ghani industry in particular by unhealthy speculation in oilseeds. The Board, has therefore, recommended that, as in the case of cotton, Government should fix floor and ceiling prices for all edible seeds.

5. The Board also has viewed with alarm the nefarious practice of adulteration of essential commodities like edible oils carried on, on an extensive scale, by some unscrupulous traders and has emphasised the need for urgent measures to combat such practices.

(c) The programme for 1954-55—

The programme of the Board for the development of ghani lays emphasis on the fuller utilisation of the existing capacity of this industry. The introduction of improved ghanis is expected to be a gradual process. The experience so far

gained has indicated that in the present stage of development of this industry, the introduction of improved ghani on an extensive scale has to be brought about only after the village oil industry has attained a certain degree of financial strength through fuller utilisation of its capacity. When it is difficult for the Telis to find adequate finance for obtaining oil seeds, even for existing ghanis, it would be still more difficult for them to find additional finance for stocking the large quantity of seeds required by improved ghanis. Moreover, the new ghanis involve new investments and repairs at the hands of specially trained carpenters who are not readily available on the spot. The best way in which the village oil industry can be developed is to take the existing ghanis as they are and try to give them full employment as far as possible. As the Telis earn a little more through increased output for a longer period in the year, they will be in a position to adopt better techniques.

The programme would also assist the ghani industry in the marketing of ghani oil. If confidence is created among the consumers of oil, it is bound to create an additional demand for ghani oil. For this purpose, it would be necessary to create certified agencies for selling ghani oil. In short, the main programme is to enable the existing ghanis to work for the greater part of the year, through supply of finance for stocking seeds and assisting the marketing of oil through a system of certified agencies. The marketing of oil will also be assisted through a production subsidy. In addition, demonstrations of improved ghanis will be undertaken in various parts of the country. It has been found by experience that the best way to demonstrate the greater efficiency of the improved ghanis is not through a casual demonstration before Telis but through a system of established model centres where new ghanis are worked in a commercial way. It is, therefore, proposed to establish 50 such demonstration centres, 30 of which would be located in 30 intensive areas. These centres will also organise the existing ghanis in their respective areas. In course of time, the centres may also develop into training and manufacturing workshops for supply of spare parts of the new type of ghani.

Out of the total of about 4 lakhs ghanis partially working in the country, it is proposed to assist this year ten thousand ghanis at an average rate of 200 ghanis per centre, round about the 50 demonstration centres referred to above. At the rate of 5 tons of seeds per ghani per year, ten thousand ghanis will press 50 thousand tons of oilseeds valued at Rs. 2.5 crores. To enable banks to make finance for this purpose available in rural areas, it is proposed to assist in the construction of 30 godowns in the 30 intensive areas. A loan of Rs. 20 lakhs

has also been provided for meeting part of the requirements to finance these ghanis.

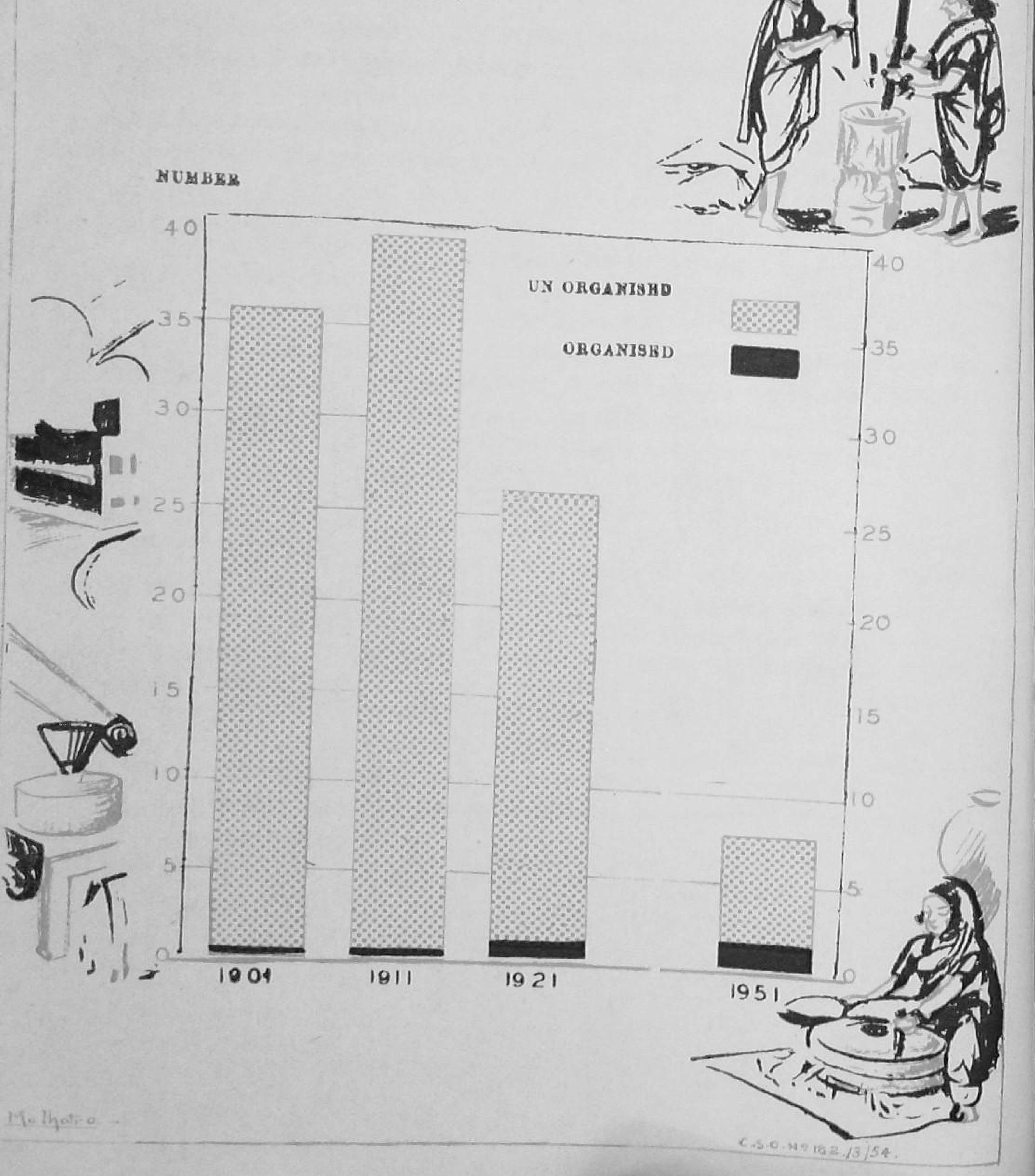
It is proposed to give a subsidy of Rs. 2-8-0 per maund of oil produced to enable ghani oil to be marketed so as to meet the competition of mill oil. For ten thousand ghanis, the amount would roughly come to Rs. 14 lakhs. In addition, the programme also visualises the sale of one thousand improved ghanis at 50% of their cost. The total expenditure is expected to be of the order of Rs. 22 lakhs.

(d) Scope for development—

The Five Year Plan has recommended that in the oil industry the policy could be adopted of developing the production of edible oils through the village industry and the production of non-edible oils through oil mills. It would be interesting to mention here the effect in terms of additional employment and income that would accrue by the implementation of this policy. Against an estimated quantity of about 10 lakhs tons of oil seeds crushed by ghanis at present, this would provide nearly 30 lakh tons of seeds for the village oil industry amounting to a net increase of 20 lakh tons of seeds. In terms of the volume of employment this would mean a 200 per cent increase over the 3 lakhs Telis employed at present either whole time or part time. In other words, the 4 lakhs ghanis which are only partially employed will not only be fully employed but it would give further scope for the installation of another 2 lakhs ghanis. As against this, the employment provided by oil mills crushing 13 lakhs tons of seeds comes to only about 64,000 according to the Fourth Census of Indian Manufactures (1949). According to the same source, the total amount of wages and salaries distributed by these mills was about Rs. 4 crores in 1949. The crushing charges by the ghanis, on the other hand, for 30 lakh tons of seeds would be of the order of Rs. 24 crores. Since this income would be generally distributed in the rural areas, it would go a long way in improving the conditions of those engaged in the industry.

PERSONS ENGAGED IN RICE &FLOUR PROCESSING INDUSTRY IN INDIA

(PER 10,000 POPULATION)



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CHAPTER IV

HANDPOUNDING OF RICE

India is one of the important rice producing countries of the world. Rice forms the staple food for a large section of the population in this country. It is the main cereal consumed in practically the whole of South India including, Madras, Travancore-Cochin, Mysore and Hyderabad, in Bengal, Assam, Bihar, and Orissa as well as in parts of Bombay and U.P.

I. Production and utilisation of paddy

Rice is cultivated extensively in India. It is estimated that nearly 75 million acres of land was under paddy cultivation in 1952-53. The estimated acreage and production of rice in recent years in the important rice producing States is indicated below :—

Acreage and Production (Rice)

(Area in thousand acres)
(Production in thousand tons)

State	1947-48		1950-51		1951-52		1952-53	
	Area	Production	Area	Production	Area	Production	Area	Production
Assam	4,010	1,688	4,043	1,531	4,058	1,454	3,947	1,549
Bihar	9,628	2,615	14,490	2,554	13,124	2,857	13,507	3,568
Bombay	2,917	1,072	3,001	993	2,995	771	3,145	946
Madhya Pradesh	8,609	2,304	8,996	1,830	9,006	2,638	8,977	2,635
Madras	10,529	4,344	9,881	4,242	9,873	4,305	9,993	4,033
Orissa	6,880	1,998	9,572	3,003	9,651	3,572	9,564	3,366
Uttar Pradesh	7,924	1,990	9,519	1,967	8,614	1,529	8,845	1,850
West Bengal	9,345	3,404	9,802	3,911	9,488	3,479	10,199	3,948
Hyderabad	1,305	459	1,287	357	1,569	414	1,252	306
Mysore	754	253	762	279	757	344	735	273
Travancore-Cochin	919	382	1,059	429	1,059	434	1,059	398
Other States	1,595	738	3,723	970	3,423	1,027	3,451	907
Total...	64,415	21,247	76,135	22,066	73,617	22,824	74,674	23,779

(The figures of production are in terms of rice, in terms of paddy, the production would be 50% higher in each case)

It is evident from the table above, that both the acreage and the production of rice have been steadily going up in recent years. This could be attributed to increased irrigation facilities, increased utilisation of fertilizers and more land brought under cultivation in the effort to achieve self-sufficiency.

The entire production of paddy is not available for consumption. It is generally estimated that 12½ per cent. of the total production of paddy goes as seed or wastage. The remaining quantity could be presumed to be processed and consumed.

India has always been an importer of rice in fairly large quantities. Before the war, the deficit used to be met by imports from Burma. The imports of rice for the Indian Sub-continent including Pakistan used to be about 15 lakhs tons during this period. Depending on the availability and price, the quantity of rice imported has shown considerable variations. Whereas in 1951-52 nearly 7·5 lakh tons of rice was imported, it was as low as 2 lakh tons in 1953. According to the programme for 1954, 6 lakh tons of rice are expected to be imported from Burma. Taking into account the internal production and imports, following quantities of rice are estimated to have been available for consumption in recent years.

Quantity of rice available for consumption

(Quantity in thousand tons)

	Production of rice.	Rice available for consumption from indigenous production.	Imports*	Total quantity available for consumption.
1950-51	22,066	19,300	353	19,653
1951-52	22,824	20,000	749	20,749
1952-53	23,779	20,800	722	21,522

* The figures relate to calendar years 1950, 1951 and 1952.

As already indicated elsewhere, the consumption of rice varies in different localities. The Bulletin on Food Statistics issued by the Economic and Statistical Adviser to the Ministry of Food and Agriculture indicates the production as well as the net imports of rice in various States. On the basis of these figures, the consumption pattern of rice in the more important rice consuming areas is indicated below.

Production and net imports of rice

(Thousand tons)

	1950			1951			1952		
	Production	Net Imports	Total Quantity available	Production	Net Imports	Total Quantity available	Production	Net Imports	Total Quantity available
Assam	1,737	—4	1,733	1,413	44	1,457	1,473	8	1,481
Bihar	3,631	6	3,637	2,554	100	2,654	2,712	11	2,723
Madhya-Pradesh	2,569	—145	2,424	1,495	—23	1,472	2,419	—126	2,293
Bombay	1,080	148	1,228	1,004	148	1,152	771	176	947
Uttar Pradesh	2,507	—125	2,382	1,967	—29	1,938	1,529	—15	1,514
Madras	4,050	251	4,301	4,060	163	4,223	4,025	208	4,233
Orissa	2,048	—107	1,941	2,006	—20	1,986	2,393	—126	2,267
West Bengal	3,682	21	3,703	3,911	32	3,943	3,479	140	3,619
Travancore-Cochin	398	245	643	398	270	668	398	311	709
Mysore	239	21	260	259	12	271	239	9	248

It would be observed that Madras, West Bengal, Orissa, Bihar, Madhya Pradesh, Uttar Pradesh and Assam are the most important rice consuming areas. Of these, while Madhya Pradesh, Uttar Pradesh and Orissa are surplus States, the other States have to import considerable quantities of rice to meet their requirements.

II Targets of production in the Five Year Plan

The Five Year Plan envisages a substantial increase in rice production which is expected to be of four million tons during the Plan period. Against an estimated

production of 22 million tons in 1950-51, the rice production is expected to have gone up to 23·7 million tons in 1952-53. It is to be anticipated that the target of the Plan would be attained by 1955-56.

III. Brief Survey of the Industry

Handpounding of rice is a traditional village industry, providing employment to a large number of rural workers, particularly to women. It is both a whole time and a spare time occupation. Wherever it is carried on for commercial purposes it is done by whole time labourers and for home consumption it is done by consumers themselves in their spare time. All rice eating tracts except Madras have, more or less, adhered to the indigenous method of processing rice, namely handpounding. It is only in Madras that machine milling of rice has made the greatest headway causing a severe blow to the custom of handpounding.

Unlike other cottage industries the rice pounding industry has survived to a great extent the onslaught of mechanisation. Until recently, it continued to handle practically 75 per cent of the total paddy processed, the remaining paddy being dealt with by rice mills. The period of controls and procurement of paddy by government for rationing purposes, however, has dealt a serious blow to this traditional village industry. During this period it is estimated that the quantity of paddy processed by hand has come down to 60 per cent. The continued existence of this industry on such an extensive scale could be attributed to the following reasons :—

(i) It provides part time occupation to the women folk in the rural areas who process the paddy as a part of their domestic duties and in some cases as part time occupation and thus enable to keep down the processing cost.

(ii) The majority of the existing rice mills are of the huller type and are less efficient than the handpounding method from the point of recovery of rice.

(iii) The nutritive value and taste of handpounded rice are appreciated by a large section of the consuming public.

The quality of handpounded rice is admittedly superior to that of the mill product. This is a fact of very great importance, as ordinarily in most of the industries, the quality of the hand product is a little inferior to that of the mill product but in this case, and probably in all food processing industries, the fact is otherwise. It is now commonly recognised that rice mills have gone very far

in developing a wrong taste of the consumers and producing an inferior stuff with a view to catering to that wrong taste. The harm done by this wrong catering has been amply realised and the mills are asked to retrace their steps and come back to the level of handpounding industry in respect of quality, i.e. nutritive value.

Handpounding of rice is an industry which stands out by itself among village industries as capable of satisfying practically all tests of an industry. It makes the best use of the resources, as it gives greater recovery of rice from paddy than huller mills. The quality of handpounded rice is, as noted above, standard. The cost of handpounded rice to the consumer is not greater than that of milled rice turned out by hullers, if account is taken of the greater recovery of rice in handpounding. And above all, it provides part-time employment to millions of women in the country side.

In recent years a large number of rice mills have been established all over the country. There are at present about 1,400 rice mills which come under the Factories Act according to the Fourth Census of Indian Manufactures, 1949.

In addition, there are a large number of rice mills which are not registered under the Factories Act. The total number of rice mills is not accurately known; but it is estimated to be of the order of 10,000. Madras State has probably got the largest number of rice mills. According to information available with the Ministry of Commerce and Industry, the more important rice milling units, numbering nearly 3300, are distributed in the different States as follows :

State	*Number of mills*
Madras	1,038
U. P.	695
West Bengal	391
Bihar	268
Travancore-Cochin	235
Punjab	217
Assam	175
Hyderabad	110
Orissa	38
Kutch	24
Pepsu	39
Madhya Bharat	18
Bombay	N.A.
Total	3248

N.A.=not available.

The total capacity of these factories is not known ; most of them however do not operate to full capacity. Some of these mills are also engaged in other subsidiary operations like oilcrushing, flour grinding etc. According to the Census of Manufactures, the total quantity of rice processed by the registered rice mills in 1949 is estimated to be 1.8 million tons. The actual quantity of rice processed by all mills is likely to be of a much higher order, probably between three to four times this quantity. The proportion of paddy processed by handpounding and mills in different States is indicated below.

Proportion of handpounded rice and milled rice

	Handpounded	*Milled*
1. Bihar	95%	5%
2. Orissa	88%	12%
3. West Bengal	87%	13%
4. Uttar Pradesh	83%	17%
5. Madhya Pradesh	60%	40%
6. Punjab	34%	66%
7. Saurashtra	10%	90%
8. Madras	30%	70%
9. Bombay	30%	70%

On an all-India basis, it is estimated that about 60% of the total paddy processed is carried on through handpounding. Rice milling is widely prevalent in Madras, Bombay and Madhya Pradesh.

The handpounding industry provides employment to a large number of rural workers. The establishment of rice mills has been responsible for the gradual decline in the employment provided by this industry. According to general census returns, the total number of professional workers employed in the handpounding industry was 5 lakhs in 1901 which decreased to 2 lakhs by 1951. The decline has been particularly significant among the female workers who are generally engaged in this profession. On the other hand, the employment provided by the mill industry is negligible. According to the census of Manufactures, 1949, only about 53,000 persons are employed by the registered mills.

IV. Technique of rice processing.

There are different types of indigenous instruments used in different parts of India for the handpounding of rice. The wooden and stone chakkis, the pestle and mortar and dhenkis are the well known types. While the last two are used for turning out polished rice, chakkis are used for dehusking paddy which yields unpolished rice. When paddy is dehusked and rice polished simultaneously by dhenkis, there is considerable breakage of rice with consequent wastage and lower recovery of rice. It is, therefore, preferable to use chakkis for dehusking the paddy, the dehusked rice being further polished by dhenkis.

Mills could be classified into two different categories on the basis of the machinery used by them: the shellers and the hullers. Most of the existing mills belong to the latter category. The hullers are admittedly wasteful and considerably reduce the recovery of rice from paddy.

The huller mills also suffer from two other defects.

(i) They do not produce bran in a pure form. The bran contains broken paddy husk and other fibrous matters with great admixture of silica. This could be consumed as animal fodder, only with harmful effect owing to the high percentage of silica. In certain areas where there is a surplus of cattle fodder this form of bran is not consumed by animals and is used as fuel for firing the rice mill boilers. This means that the huller type of mills are a permanent handicap and contribute to wastage of food both for men as well as for cattle.

(ii) The power consumption in huller mills is very high when compared to their production capacity. Hullers require nearly double the quantity of power campared to sheller mills and when we consider the large number of hullers in the country, the power used by these mills becomes considerable in quantity.

The percentage recovery of rice by different processes (both handpounded and mill) is indicated in the table below.

Recovery of rice

	Handpounded: Rice including edible brokens per cent.	Handpounded: Bran including some of the germ and very small particles of the rice kernel per cent.	Machine milled: Rice including edible broken per cent.	Machine milled: Bran including some of the germs and very small particles of the rice kernel per cent.
1. Madras*	73	7	70	10
2. Bihar"	73	3	67·6	8·4
3. Orissa%	71	4	67	9
4. Madhya Pradesh'	73	3	68	9
5. Mysore**	69	6	67	8
Total average	72·5	3·6	69·5	9·7

The prevailing general food shortage in the country calls for economy in the processing and the prevention of avoidable wastage. Thus in the best interests of the nation, the huller type mills cannot be allowed to function at all. Naturally the huller method of handpounding must also be converted into the sheller method of handpounding from the point of view of increasing recovery, supply of unmixed bran and reducing physical labour as well as processing costs. Considering the fact that the bulk of paddy is handled by the handprocess and the bulk of handpounding is of the huller method, improvement in this direction becomes absolutely essential in the interests of the nation as well as of the handpounding industry itself.

In any case the huller method, whether of the hand process or of the mills, cannot be allowed to continue any longer. The question to be considered is whether huller type of mills should be replaced by sheller type mills or whether gradually they could be allowed to cease functioning to be replaced by sheller

* Average of 1944-45 to 1946-47
" Average of 1943-44 to 1945-46
% Aveaage of 1936-37 to 1947-48
' Average of 1945-46 to 1947-48
** Average of 1946-47

methods of handpounding. It is clear that the recovery of slightly polished rice in sheller mills is the same as in the sheller method of handpounding since the nature of the process is identical in both cases. In either case, only the husk is removed.

The Ministry of Food and Agriculture has issued a circular to States requesting them to take steps to prevent the establishment of new huller mills and also to persuade mills to adopt improvements in the machinery. A number of States have adopted the licensing system to prevent any new mills being established. When the existing huller mills are gradually abolished, they should be substituted by organised centres of handpounding which can meet the bulk requirements of rice.

In this connection, it is interesting to mention here the resolution adopted by the Bihar Assembly on the 29th July 1953. The resolution recommends to the Government to take immediate steps for the following.

1. Henceforth no new rice mill be permitted to be established in Bihar.

2. Existing mills should not be allowed to process rice beyond their present output and they should be asked to reduce gradually their outturn of rice in such a manner that within four years they may discontinue the milling of rice altogether.

3. Mills other than rice mills should be prohibited from dehusking of paddy and processing of rice.

4. A cess should be levied on the production of rice mills.

5. For all governmental requirements of rice as for jails, hospitals and for government stocks, handpounded rice should only be procured.

6. The processing of government stocks of paddy should be carried out entirely by handpounding; moreover, the distribution should be done only in the shape of paddy.

7. The Union Government should be requested to enforce the above-mentioned provisions throughout the country.

The Bihar Council has also adopted a similar resolution.

The findings of the Rice Mill Enquiry Committee appointed by the Travan- core-Cochin government on the effect of banning huller mills in that State may also be quoted here. According to the report submitted by this Committee, the replacement of the rice mills by handpounding process increased the yield of rice in Travancore area to the tune of 18 lakhs *paras* equivalent in money to Rs. 1,57,50,000 per year. The corresponding gain for Cochin area amounted in money value to Rs. 70 lakhs per year, making a total of Rs. 2,27,50,000. The total wages earned from handpounding amounted to Rs. 1,57,50,000 for Travancore and Rs. 70 lakhs for Cochin, making a total value of wages for Travancore and Cochin of Rs. 2,27,50,000 annually.

V. Nutritive value of handpounded rice

Rice, besides starch, contains protein, iron, calcium, phosphorous, fat, and vitamins 'A' and 'B'. If it is pounded by hand, the quantity of phosphorous and vitamin 'B' present in it is sufficient to meet nutritive requirements. Phosphorous is contained in the outer-layers of rice and the quantity present is largely determined by the degree of milling. As the degree of polishing proceeds, the phosphorous content falls. In highly milled samples only 12 to 30 per cent of the phosphorous originally present is left. More important than phosphorous is the vitamin content of rice which is available in fairly abundant quantities in the outerlayers of rice. Faulty method of preparation removes most of it and the continuous use of such deficient rice causes beri-beri. Experiments conducted with rice processed by various processes have indicated that while handpounded rice retains a large quan- tity of vitamin 'B', the machine milled rice is deficient in this important food consti- tuent. The vitamin content of husked or unmilled rice is high. Par boiled hand- pounded rice retains more of it than raw handpounded rice. Raw rice loses nearly ⅔ of the Vitamin 'B' originally present while the loss in par-boiled rice is only ⅓ for the degree of polish generally practised in this country. Par-boiled rice retains a considerable proportion of vitamin 'B' even when highly milled. The striking change brought about in the nutritive value of rice as a result of par-boiling is pro- bably because during the process of par-boiling some of the vitamins and other nutritive substances contained in the outerlayers of rice diffuse through the grains and cannot be removed by subsequent milling. As an illustrative example, the quantity of vitamin 'B' present in the samples of merely shelled rice, parboiled rice, and milled raw rice is indicated in the table below.

Vitamin 'B' in rice

(In micrograms per gram)

Shelled.	Par-boiled milled.	Raw-milled.
4·0	1·7	1·1
4·2	2·1	0·5

From the above, it is clear that the milling of rice removes the nutritive principles of rice and makes it less wholesome than the handpounded rice. According to nutrition experts, handpounded rice represents the standard of nutrition which is widely accepted as the optimum. In the case of par-boiled rice, the nutritive elements are retained to some extent even when it is processed by mills. The par-boiled rice is thus less harmful than the milled raw rice. This is significant in view of the fact that the majority of the people in Assam, Bengal, Bihar, Orissa and to some extent in Madras consume par-boiled in preference to raw rice. Although par-boiling before milling reduces loss, there is still a definite lowering of nutritive value in milling in a machine as compared with dehusking by handpounding.

Losses of nutritive elements also occur during washing of rice before cooking. The extent of loss depends on the quantity of water used and the number of times it is done. But it is the first washing that removes most of the food factors. Loss also occurs through the water in which rice is cooked. This could be prevented if the water is consumed or if just a sufficient quantity is used as is necessary for cooking so that none is left to be strained off. Over,washing and cooking in extra water are responsible for the loss of about 50 per cent. of calcium and phosphorus and 75 per cent of iron present in rice. Considerable loss of vitamin 'B' also takes place in this way.

VI. Problems of the Industry

The handpounding industry, as it exists at present, suffers from a number of disadvantages, more important of which are indicated below.

(i) Government directly or indirectly encourages rice mills both for procurement and extraction. This has had an adverse effect on the handpounding industry. Even in the rural areas, new rice mills are increasingly being introduced to the deteriment of the handpounding industry.

The partial solution of this problem would be the organisation of co-operative societies of handpounders for the supply of hand-pounded rice for consumers and for government procurement.

(ii) Paddy pounding dhenkis in many parts of the country have large unutilised capacity chiefly on account of the non-availability of paddy. The main reason for this is the lack of finance for stocking paddy in the season. As there are no properly built godowns in the rural areas, it is not possible for banks to advance loans against stock.

A programme of constructing godowns in rural centres will go a long way in removing this difficulty.

(iii) The handpounding method consisting either of dhenkis or the pestle and mortar involves hard labour and, therefore, is giving way to mill processing of rice. Recovery of rice as well as daily output are also low in this method. The bran is also not available in a pure form. Replacing of the pounding method by sheller method in handpounding, would solve this problem to a great extent. In other words replacement of dhenkis or pestle and mortar by stone chakkis should be undertaken.

(iv) As the people have taken to white polished rice even in hand-pounding there is a great loss of food value. Over washing and faulty methods of cooking rice also involve loss of food substances. To reduce loss, it is necessary to conduct an educative campaign to persuade rice consumers to use hand polished rice and to reduce the degree of polish to the minimum in the hand process. The loss of food substance involved in over washing and faulty cooking of rice can also be avoided through such a campaign.

(v) The implements of the hand process require to be improved. A research programme for evolving better implements such as a chakki which can reduce breakage and the proportion of unhusked paddy, a paddy separator to separate unhusked paddy from de-husked rice etc., will have to be carried out.

VII. Programme of development

(a) *Recommendations of the Planning Commission*

For the development of the handpounding industry, the Planning Commission has recommended two main courses:

(i) Further expansion of the large scale industry should not be permitted except under certain conditions; and

(ii) From the point of view of better nutrition and employment, the huller type of rice mills should be eliminated through gradual replacement by handpounding.

Under the Essential Supplies (Temporary Powers) Act which will be in force till January 26, 1955, State Governments have already been advised to control the establishment of rice mills. Section 3 of the Act indicates that the Central Government is competent to pass an order prohibiting the indiscriminate establishment of rice mills as it is empowered to prohibit "production, supply and distribution" of a commodity for maintaining or increasing supplies thereto or for securing its equitable distribution and availability at fair prices. Section 3(2) provides for regulating by licenses, permits or otherwise, the storage, transport, distribution, disposal, acquisition and use or consumption, of any essential commodity. In addition, Section (a) permits regulation of production or manufacture of the commodity.

The Ministry of Food have been pressing upon State Governments to discourage huller type of rice mills. The Food Ministry have suggested that no licenses should be given for the establishment of new huller type mills for increasing the hulling capacity of the existing huller type mills. The huller type mill is a destructive type of equipment for milling particularly raw rice, as not only the output of whole grains is low but the nutritive value is also lowered on account of the loss of bran. According to the Ministry, the larger interests of the country, therefore, require that all huller mills should be gradually replaced. The Government of India, the Food Ministry further points out, are anxious to protect the interests of the small millowner but a line must be drawn between protection of interests which are coincident with and contributory to the large national interests and protection which leads to waste of valuable foodgrains, particularly rice.

The Food Ministry has suggested the introduction of paddy separators in the huller mills with a view to improving their working efficiency. The State Governments have not been able, however, to impress upon the small huller mills the practicability of adopting the Food Ministry's suggestions. The case is that investment of any additional capital in machinery is beyond their reach and the suggseted changes are likely to add to their working costs. The best course would, therefore, be as suggested by the Planning Commission, to replace the hullers by the handpounding method.

This has to be done in the interests of conserving the food resources of the country. Evidently this aspect of the problem will involve a close study of the conditions of the mills in the different areas so that the magnitude of wastage caused by them may be assessed and the aspects of replacing hullers by handpounding worked out. It is, therefore, necessary to appoint an Enquiry Committee to study the problem comprehensively taking into account the recommendations made by the Planning Commission and the Khadi Board. The Committee should study the special circumstances obtaining in each State, the phases through which the huller mills could be replaced by developing the handpounding industry and the legislative and financial implications of such a phased programme.

An immediate measure that can be adopted by the State Governments in discouraging rice mills would be to withdraw the support so far given to them of getting procured paddy processed through them and getting handpounded rice instead, for meeting their rationing requirements.

Another aspect to which attention has to be paid in the programme of development relates to the popularisation of the paraboiling process. As pointed out earlier, the paraboiling process has the advantage of conserving the nutritive principles of rice and therefore deserves to be adopted on a wide scale. Faulty methods of boiling and drying of paddy have been responsible for creating a certain amount of prejudice among the consumers against parboiled rice. Properly prepared parboiled rice would be acceptable to the consumers. Considerable propaganda on the nutritive value and proper processing of parboiled rice has to be undertaken.

(*b*) *Recommendations of the Board.*

In regard to the development of the handpounding industry, the All-India

Khadi and Village Industries Board has made the following recommendations to the Government.

"The huller types of mills are recognised as very wasteful involving, as they do, loss both in the yield of rice and in its nutritive value. It is from this consideration that the Central Government have suggested to State Governments that no licenses should be given for the establishment of new huller type mills or for increasing the hulling capacity of the existing huller type of mills. Government should assume powers through suitable legislation to put into operation without delay the following proposals.

(i) To ban the huller types of rice mills.

(ii) To prevent the establishment of new sheller mills or disallow any increase in the capacity of the existing sheller mills.

State Governments may be requested to establish co-operatives of hand-pounders which can take advantage of the assistance provided in the Board's scheme of developing handpounding rice industry. Government may encourage such co-operatives by getting procured paddy handpounded through them instead of through rice mills".

(c) *Programme for 1954-55*

The programme of the Board for the development of the handpounding of rice for the year 1954-55 covers the following aspects of the industry :

1. Improving the technique of the hand process by—
   - (a) introduction of chakkis for dehusking paddy,
   - (b) introduction of dhenkis for polishing rice,
   - (c) improving the existing dhenkis, and
   - (d) introduction of winnowing fans.

2. Introduction of the parboiled process in areas where it does not exist.

3. Arranging supply of standard quality of rice through co-operatives and recognised institutions.

4. Assisting research for evolving better types of implements and processes, and

5. Propaganda by means of literature, documentary films, exhibitions, etc., for educating consumers regarding the nutritive value of under-polished rice and proper methods of cooking rice.

The experience gained during the short interval in organising the scheme in different areas showed that in addition to the chakkis for dehusking paddy, it will be useful to retain the dhenki for partial polishing of the dehusked rice. It was found, however, that dhenkis will have to be introduced newly in certain areas and improvement effected in the design of existing dhenkis. Provision has, therefore, been made for supplying or improving dhenkis at 50 per cent cost. Emphasis will be mainly laid on consolidating the position of the handpounding industry, in the first place, by arresting the decline in the present proportion of 60 per cent of the paddy which is hand processed as compared to the 40 per cent processed by rice mills. This is expected to be done by standardising the hand process in its technical aspect and also by organising regular supply of standard quality of rice.

The programme also visualises a subsidy for processing one lakh tons of paddy at an average rate of 6 as. per maund of paddy processed. The total expenditure on this account would amount to Rs. 10·5 lakhs. It is also proposed to grant short term loans to societies and institutions wherever necessary as working capital for stocking paddy. The expenditure of this amount would amount to Rs. 19.5 lakhs. A working capital of Rs. 50,000 for the manufacture and stocking of implements has also been provided. The programme would cover most of the rice producing areas in the country.

(*d*) *Scope for development*

According to present estimates, 60 per cent of the total paddy processed is carried out by handpounding. On the basis of 20 million tons of rice being available for processing, the handpounding industry would account for nearly 12 million tons of rice; at the rate of 2 tons of rice being processed per person working for six months in a year, this would provide employment to nearly 60 lakhs of persons. In actual practice, however, a large proportion of the paddy processed is being carried out not by professionals but by consumers themselves at home. None-the-less this would be a rough indication of the magnitude of the gainful employment the industry provides at present. Even the professional workers engaged in handpounding has been estimated to be 2 lakhs in 1951. If the entire quantity of paddy is processed by handpounding it would provide work for another 40 lakhs of persons on the same basis as above.

At an average rate of Rs. 1-8-0 per maund of rice processed, the wages distributed to handpounders would amount to nearly Rs. 50 crores. Considerable

wealth is, thus, distributed among the rural population by means of this industry. When we consider the extremely low purchasing power of the village folk, the detrimental effect of any further cut in the distribution of these wages to villagers would become clear. On the other hand if all the paddy processed is done through handpounding, it would enable the distribution of additional Rs. 33 crores in the villages.

Apart from providing employment and wages to the rural population, if the paddy at present processed by mills is handpounded, it would also quicken the pace towards achieving self-sufficiency in food grains. On an average rate of three per cent higher recovery of rice by the handpounding method, the additional quantity of rice recovered would amount to about 3·6 lakh tons. This quantity forms a substantial percentage of the rice imported every year and in terms of value, the saving in foreign exchange would be of the order of Rs. 36 crores.

CHAPTER V

BEE-KEEPING

The use of honey as an article of food and medicine has been known in India from thousands of years. The science of bee-keeping and the study of the lives and habits of bees, however, did not attract us in ancient times. Bee-keeping, as it is known today, is a comparatively new industry.

I Varieties of Bees in India

There is, probably, no other country where bees of as many varieties are found as in India. The Giant bee or the Rock bee, a profuse gatherer of honey, is a special variety found in India. This class is responsible for the production of about 90 per cent of the yield of honey in our country. Again it is this class of bees which accounts for nearly the entire production of our bees wax. Unfortunately it has a migratory tendency. It is also ferocious and even a few stings very often bring about fatal consequences. The importance of this bee is not confined to the high production of honey alone ; being large sized, it is able to reach high altitudes. The cross polination of flowers of tall trees would be almost impossible but for this class of bees.

The little bee known as the flower bee is also very common in India. It does not sting but is a poor gatherer of honey. Besides, it has a migratory nature. This bee is the smallest in size and, therefore, the yield of honey from a colony is small.

For the purpose of bee-keeping, it is the *apis-indica*, otherwise known as the Indian bee, that is of importance. It collects fairly large quantities of honey. Natural colonies of these bees are known to yield as much as 15 pounds each on an average per year. When reared properly in modern artificial hives, these colonies are known to have yielded a harvest of over 100 pounds each in an year.

This bee can be domesticated and when handled properly does not sting. It possesses social habits and has home instincts. It is said that the Caucasion Italian and the other domesticable varieties of bees reared in foreign countries

are the progeny of the colonies of the *apis-indica* transported from India and that India was the original home of bees.

II. Technique of Bee-Keeping

Bee-Keeping, in the modern sense, refers to the keeping or the rearing of bees of the species of *apis-indica*, for the purpose of collecting honey. In recent years, attempts are being made to attract bees of this variety into earthern pots or logs of wood by smearing the interior with bee's wax. Attracted by the smell of the wax, swarms of bees sometimes enter them and construct their combs. When adequate quantity of honey has been collected, the bees are scattered away and the combs inside are squeezed out in the usual manner. This is a somewhat crude way of collecting honey, because the adult bees are driven out at a time when there is dearth of flowers and their prospects of finding a new home and food to carry them through the season of scarcity are almost negligible. Often the queen bee is lost or wounded in this process.

Bee-keeping, according to modern methods, is the rearing of bees in artificial hives where they are enabled to live a life as near as possible to what they would do in their natural homes. The hives possess brood and super chambers. The queen bee with a number of attendant bees lives in the brood chamber where she lays eggs. The pollen and a sufficient quantity of honey required for the day-to-day maintenance of the colony are stored in the combs in this chamber. These combs are not interfered with at all except for the purpose of an occasional examination to check up whether the brood is healthy, strong and free from pests and diseases : whether the food position for the bees is sound and similar matters concerning the well being of the bees. Any irregularity or deficiency is immediately attended to. The super chamber contains removable frames to which artificial combs are attached. The queen bee does not enter these where only honey is stored by the bees as provision for periods of scarcity. Often the hives have two, three, four or even more super chambers with removable frames. When the honey in these is ripe for extraction, the frames are removed, any bees adhering to them being gently removed. The frames are then placed inside a machine which is turned. The centrifugal force acting on them throws out the honey without damaging the combs which, together with the frames, are put back in their original places, thus enabling the

bees again to store the honey in these frames. The normal life of the bees is not disturbed in any way. The bees are, on the other hand, induced to collect more and more honey. Only the surplus honey is taken out by the bee-keeper, leaving sufficient quantity for the bees to pull through even in times of scarcity. Artificial feed made of sugar syrups is given when required.

Bee-keeping thus implies the providing of a suitable home for bee's shelter from winds, sun, rain, cold and enemies in a site suitable for their living and working ; the planting of fruit, vegetable and flower trees, plants ahd creepers so as to get blossoms throughout the year by turns to supplement what nature affords in the area ; the giving of artificial feed when no natural food becomes available to them and the extraction of only the surplus honey leaving sufficient food to carry the bees through during periods of scarcity.

III. Brief Survey of the Indust ry

Bee-keeping in India in the scientific manner dates back from 1924 when an American missionary Dr. Newton commenced the rearing of bees and began to teach the science to his followers in Shembarganur, in South India. Considerable headway has been made by the industry since then. A bee-keepers society was formed at Marthandom in Travancore-Cochin for the marketing of honey produced by its members. In this area, about 7800 modern hives with bees are kept by about 1600 bee-keepers who harvest about 78,000 pounds of apairy honey every year. In Cochin State, about 800 persons are reported to be carrying on the industry with about 1500 modern hives which yield normally 15,000 pounds of apairy honey per year. The All-Cochin Bee-keepers Co-operative Society has been organised to market the production of the members.

The States of Coorg, Mysore and Madras followed in the foot-steps of Travancore-Cochin. Coorg made considerable progress for sometime. A Bee-keepers Co-operative Society was organised at Virapet to market the honey of its members. But the bee-keeping industry of Coorg is now confined for the most part to the rearing of bees in pots and the production of pot honey in the manner indicated earlier. Similar is the history of bee-keeping in the State of Mysore where, a Bee-keepers Co-operative Society was organised for a similar purpose with headquarters at Sakalespur which now attends to the marketing of pot honey. Two bee-keepers' co-operatives were registered in the State of Madras at Manglore and Puttur

(both in the South Kanara District). Very little progress has, however, been made subsequently. Madhya Pradesh, Uttar Pradesh and Bengal came next in the field. The State of Bombay made comparatively a recent start but has made good progress as a result of organised work by the Village Industries Committee of the State.

The bee-keeping work in the Bombay State is concentrated in the two districts of North Satara (Mahabaleshwar) in Maharashtra and North Kanara in Karnatak. They are responsible for the annual production of about 70,000 lbs. of honey produced in the apiaries of 2,200 bee-keepers owning between them 6,700 modern bee-hives. While in Maharashtra, the Village Industries Committee attends to all the work in relation to the industry, namely organisation, supply of implements, finance, training, research, collection, processing and marketing, it attends to the organisation, financing, training and research in Karnatak leaving 7 co-operative societies of bee-keepers to attend to the supply of implements, collection of honey, its processing and marketing. There is one such co-operative society for every revenue sub-division (taluka). There is no bee-keeper in that district who is not a member of one or other of the Co-operative Societies and no part of honey except what is retained by the bee keeper for his personal use is sold except through the co-operative to which he belongs.

All the apiary honey produced in the State is sold under a guarantee of purity by the Village Industries Committee which fixes the price that the bee-keepers should receive and what the final consumer should be charged.

The present position of the industry in the country can be summarised as follows :—

Name of the State	No. of Modern bee-hives as on 1-7-1953	No. of bee-keepers as on 1-7-1953	Honey produced annually 1952*
Bombay	6,704	2,197	71,141 lbs.
Madras	4,000	2,000	40,000 „
Uttar Pradesh	1,284	—	1,902 „
Punjab (I)	295	105	1,540 „
Travancore-Cochin	9,300	2,400	91,000 „
Mysore	1,173	653	4,392 „
Manipur	800	300	2,400 „
Coorg	1,500	600	5,000 „
Total ...	25,056	8,255	2,17,375 lbs.

*Approximate figures.

IV. Problems of the Industry

The slow progress or the set-back of the industry may be attributed to the following among other reasons. Bee-keeping is not one of the industries that yields quick results. It is meant only for those individuals and States that can persevere and wait. The handling of bees requires considerable skill on the part of the bee-keeper which can be gained only by experience. The educated rarely take to the industry. The training of the villagers is left to the care of fieldmen or Kamgars who themselves have very scanty knowledge of the science. No arragements exist to train fieldmen. In some instances the funds made available have been inadequate. In others, the schemes have not been persevered with to enable the industry to take root. No attention has been given in some cases to the supply of proper types of implements. Sometimes, the industry has been sought to be introduced amongst a class least fitted for it. And in some cases wrong areas have been chosen for development.

A very serious problem that confronts the producers of apiary honey is the competition it has to face with other types of honey such as honey derived by squeezing combs after scaring away the bees, honey adulterated with sugar or gur syrup and artificial honey manufactured from inverted sugar ; the producers or the manufacturers of these types of honey can afford to sell their product at very low prices as the manufacturing cost is low. This cheap honey does not usually possess any keeping qualities. It does not possess the food and medicinal values which real honey possessess. The consumer often cannot distinguish between pure and artificial honey. Price considerations weigh heavily with him. Artificial honey often has an injurious effect on the health of the consumer. Legislation to prohibit the sale of adulterated and spurious honeys is hence overdue. In all advanced countries, legislation exists to ban the sale of such artificial and adulterated products under the name of honey. State Governments have to be induced to move in this matter, as adulteration gives a set back to the progress of the industry. The rearing of bees calls for some industry and skill. The spotting out of natural colonies and destroying them to derive the honey is an extremely simple affair. The forest dwellers are more easily attracted to this kind of honey production and do not consent to take to improved methods. This also has retarded the growth of this industry.

It has been possible in recent years to create a market for apiary honey among discriminating buyers. In certain areas, however, the supply of apiary honey is not properly organised. This has resulted in the sale of honey at as low a price as Rs. 1/8 per lb. in certain areas, while at other places, it fetches as high a price as Rs. 4/- per lb. This only indicates that the present marketing organisation for honey is defective. At present it is valued only as an article of medicine. Its value as an article of food requires to be sufficiently advertised.

The cost of production of apiary honey is high in India. This is because of the very low average yield of about 7 lb. per colony. The ignorance of the science of bee-keeping among the bee-keepers, the wrong types of implements, the very poor scale on which the industry is carried on—an average of 3 colonies of bees per bee-keeper—are responsible for the low income from the industry, and the low income is in its turn responsible for lack of interest in the science among bee-keepers. At present research in bee-keeping is carried on only at two places: Coimbatore in South India and Katran in the East Punjab. The research schemes are financed by the I. C. A. R. On a small scale some research work is being carried on at Mahabaleswar by the Village Industries Committee. Little work worth the name is attempted in the matter of the breeding and domesticating of wild bees or for the collection and proper marketing of its honey.

V. Programme

Bee-keeping is one of the village industries taken up for intensive development under the Five Year Plan. It has been entrusted to the care of the All-India Khadi and Village Industries Board. During 1953, six area offices with 28 sub-stations where training is given to agriculturists have been started; 42 candidates are undergoing training for fieldmen's course and 4 candidates are being trained for the higher services. Arrangements have been made to impart training to the latter at Mahabaleswar and to the former at Mahabaleswar and Honavar in the Bombay State, Sakalespur in the Mysore State, at Martandam in the Travancore-Cochin State, Madurai in the Madras State, Wardha in Madhya Pradesh, and Sodepur in West Bengal. A marketing survey has been undertaken and marketing organisers have been appointed. Stockists are appointed at

important marketing centres. Sales Depots and Emporia are being opened in important cities. The education of the public in the use of honey and the dangers of using uncertified honey has been undertaken. It has been possible in this short time to interest and to employ 140 new agriculturists in the industry, besides 34 persons in the manufacture of implements and 10 persons in the marketing of honey.

The programme of work for 1954-55 aims at starting 225 more bee-keeping centres, the training of 115 persons as fieldmen and supervisors, the introduction of bee-keeping courses in 60 elementary schools and agricultural schools and the provision of marketing arrangements in 12 zones. Arrangements are being made to manufacture standardised implements for being supplied to bee-keepers at subsidised prices. The Government of Bombay has been approached to introduce legislation to prevent the sale of artificial and adulterated articles under the name of honey.

As a result of this work, it is expected that at the end of the five years' period, the production would increase by about 3 lakhs of lbs. What is more important, proper training in bee-keeping would be imparted to over 500 experts, and to about 1400 villagers, each of whom would be enabled to earn an income of Rs. 150 to Rs. 200 from this industry to supplement his income from agriculture. A scheme for the scientific collection and marketing of wild honey (the produce of the rock-bee is being drawn up. Ways of finding alternative uses of honey e. g., in the manufacture of jams, the preservation of fruits are under investigation. If successful they would open out new avenues for programmes of cottage industries.

CHAPTER VI

PALM GUR INDUSTRY

The palm gur industry is one of the ancient industries of India. Before the advent of sugarcane products, the entire sugar requirements of the people were met from palm trees in such regions where these were to be found. Palm gur, for example, has been in use in Madras, Bengal and Travancore-Cochin States since centuries.

The sparse location of the palms and difficulties of collecting juice in large quantities have kept the industry on indigenous pattern and no large scale industry interested itself in the development of palm gur.

This industry has great potentialities of employment and production. Wealth can be created from resources which are otherwise wasted, by utilising palms for gur production. Raw material for this industry is abundantly available and with a little training and with comparatively small capital it is not only possible to add substantially to the natural wealth of the country but also to relieve the pressure on land for additional cultivation of sugarcane that the increase in demand for sugar for the additions to our population or a rise in consumption may involve.

I. Brief survey of the existing position

Palm trees are of four types, namely, palmyra, sago, date and cocoanut. Palm gur is manufactured from the sweet juice of palms, popularly known as neera which when fermented becomes toddy.

The total number of palm trees in India has been estimated to be of the order of 5 crores according to the estimates made by the Tariff Board in 1950. The total number of palms capable of being tapped in the State of Madras alone is over 66 lakhs. Palm trees are spread almost all over India. The Palmyra is found in all States except in East Punjab and Assam and account for nearly 80 per cent of the total number of palm trees in the country. The industry has developed to some significant extent only in the States of Madras, Bengal

and Travancore-Cochin. Of late, however, considerable interest in its development has been evinced by State Governments like Bombay, Bihar and Uttar Pradesh.

It is estimated that out of 5 crores of palm trees available in the country only about 25 lakhs are being tapped for the manufacture of gur and another 50 lakhs to 60 lakhs are tapped for toddy. The rest of the trees remain unexploited. On an average, one ton of palm gur can be produced per annum by tapping 50 trees. On this basis the total production of palm gur in recent years is estimated to be of the order of 50,000 to 55,000 tons, valued at Rs. 2 crores. Of this nearly 30,000 tons are produced by about 120,000 members of registered palm gur makers' co-operative societies numbering about 1600 in the registered State of Madras alone.

The total number of persons employed in the industry at present has been estimated to be over two lakhs. It may be pointed out that tapping of these trees is a seasonal occupation and may not provide full time employment throughout the year. On an all-India average, a trained tapper is expected to tap about 25 to 30 trees a day. Generally the season for tapping extends to a period of six months. But since all trees do not provide juice for the whole season, full time employment for tappers varies from 4 to 6 months in a year. Apart from providing employment to tappers, the industry also provides work to nearly an equal number of people in auxiliary labour such as pan-boilers, fuel collectors smiths etc.

The palm gur industry possesses certain advantages over the cane gur industry. Palm trees unlike sugarcane live for many years and yield juice for 30 to 50 years. While sugarcane requires soil that is also fit for the production of cereals, the palm can prosper on waste lands. Apart from releasing good cultivable land for food production, the palm gur manufacture dispenses with expensive crushing equipment which is an essential part of every cane gur manufacturing enterprise. The palm juice is also said to be comparatively free from chlorophyllic and other pigments, and therefore the process of clarification is considerably simpler than for cane juice. Palm juice is also said to be free from sucrose inverting enzymes, which minimise the formation of molasses. It is also noteworthy that date palm gur contains 72 per cent sucrose as against 59·7 per cent in cane gur.

Apart from the higher sugar content of palm gur, it is also a rich source of vitamin. The Director, Nutrition Research Laboratory, Indian Council of Medical

Research, Coonoor (Madras State) has analysed a sample of palmyra jaggery. The results are given below :

Carotene (Pro Vitamin A)	... Nil.
Thiamine	... 21 microgram/100 gms.
Riboflavin	... 432 microgram 100 gms.
Nicotinic acid	... 5·24 mg/100 gms.
Ascorbic acid	... 11 mg/100 gms.

The chemical composition of fresh date palm Neera, given by Shri Radhakrishna Rao, Nutrition Expert, Government of Bombay, is as under :

Specific gravity	... 1·07
pH	... 6·7—6·9
Nitrogen	... 0·056 gm. per 100 ccs.
Protein	... 0·35 gms. per 100 ccs.
Total Sugars	... 10·93 gms. per 100 ccs.
Reducing Sugars	... 0·96 gms. per 100 ccs.
Ash (Minerals)	... 0·54 gms. per 100 ccs.
Calcium	... Traces per 100 ccs.
Phosphorus	... 0·14 gms. per 100 ccs.
Iron	... 0·04 mgm. per 100 ccs.
Titrable acidity	... 8.75 ccs. of N/10 alkali.
Vitamin C	... 13·25 mgms. per 100 ccs.

In addition to these, Neera also contains 3 to 9 International Units of Vitamin B per 100 cc. and probably other members of the Vitamin B complex, but they are usually present in negligibly small quantities. The three noteworthy features of the juice are : (1) its high sugar content, (2) the presence of minerals, and (3) the presence of Vitamin C. The nutritive value of Neera is great owing to the presence of Vitamin C and minerals, along with the readily assimilable forms of sugar.

II. Problems of the Industry

The most essential problems of this industry relate to :

(i) *Raw materials :* The leasing out of palm trees is often a source of considerable hardship to the tapper. The palm trees are generally not obtainable on

easy terms. Many owners charge exorbitant rent making it prohibitive for tappers to exploit the trees. The conflict of interest of palm gur industry with toddy tapping is another great handicap for this industry. To deal with both these matters some form of state legislation appears to be necessary.

The timely supply of iron pans for boiling the juice, tapping tools as also the supply of chemicals like super-phosphate and phosphoric acid has become difficult due to controls. In this case also some assistance to the industry is called for.

(ii) *Marketing*: The bulk of the marketing of palm gur at present is done by tappers themselves through middlemen who often exploit them because of their ignorance of marketing conditions. The existing co-operative societies are not sufficiently organised for the needs of the tappers. The marketing of palm gur is related to the prices of cane gur. As palm gur is costlier than cane gur, advantage of seasonal variations in prices has to be taken in marketing palm gur. This service can be performed by a marketing organisation which is in a position to stock palm gur and advance funds to tappers by pledging the product with banks.

(iii) *Cost of manufacture*: The cost of production of palm gur is a little higher than that of cane gur at present and is responsible for hindering the rapid propagation of palm gur in new areas. The higher cost can be attributed to the existing crude methods of production, which also lower the quality of palm gur. There is considerable room for improvement and for measures of economy in production. The saving of cost of fuel which is the biggest single item in the cost of production of palm gur will considerably bring down the price of palm gur. The use of improved scientific type of furnace for boiling the juice has reduced fuel consumption by about 50 per cent. It has also led to an improvement in the quality and colour of the gur produced and saving in boiling time. What is needed is the popularisation of this furnace all over the country.

(iv) *Organisation*: Like other cottage industries, palm gur is not organised and, therefore, suffers from all the disadvantages of unorganised industries. In Madras and Travancore-Cochin about 2000 co-operative societies have been formed so far. These societies at present are not in a position to render all the assistance needed by their members due to limitation of finance and lack of technical knowledge of modern methods of production. The only activity undertaken by these societies is by way of helping the members to get licenses for tapping and in marketing the

products. For organing the workers, new co-operative societies of tappers and other auxiliary labourers engaged in the industry are needed in large numbers.

(v) *Excise bottle neck* : In most of the States the tapping of palm trees is regulated by a system of licensing. This is one of the handicaps which the tapper has to face. Apart from the payment of licensing fees, much energy and time are spent on obtaining the necessary government permission.

III. Programme of Development

(a) *The programme for 1954-55* : The palm gur development schemes have been in operation in 14 'A' and 'B' class States and 3 'C' class States. The programmes are generally executed through the State governments. The responsibility for the Board essentially lies in rendering technical guidance, providing facilities for high grade training, arranging demonstrations and providing financial aid to the co-operative societies. The Central assistance has been considered increasingly essential for solving the problem of marketing gur for which substantial loans are necessary.

The programme for 1954-55 entails an expenditure of Rs. 10 lakhs, out of which the major portion, namely Rs. 6,40,000 is for giving grants to States and institutions. The programme also proposes to strengthen the Central Palm Gur Training Institute. Necessary technical and training facilities are also proposed to be given to implement the schemes of palm gur development, in the programme of community projects administration, scheduled tribe welfare, and various non-official institutions. The proposals for this year also include the organisation of a Central Palm Gur Pilot Demonstration where all the improved manufacturing processes can be effectively demonstrated as model rural production units. By the implementation of this year's programme, an additional production of 137,000 maunds of palm gur is expected to be secured. The additional number of workers who would find employment would be 37,500.

(b) *Scope for development* : In discussing the scope for development of this industry two factors are to be taken into consideration : (i) the existing consumption and the increasing requirements of sugar for the total population and (ii) the extent to which these requirements could be met by a fuller exploitation of available palm trees.

Hitherto the requirements of the country for sugar have been met to an increasing extent from cane sugar and cane gur. The area under sugarcane

cultivation has shown a progressive increase in recent years in order to cope with the increasing requirements of sugar and gur. Whereas the total area under sugarcane was of the order of 4 million acres in 1947-48, it has increased to nearly 4·7 million acres in 1951-52. The production of sugarcane has also increased from 5·8 million tons (in terms of raw sugar) to nearly 5·9 million tons (in terms of raw sugar) in 1951-52. The production of crystal sugar was about 1·1 million tons in 1950-51 and nearly 1·5 million tons in 1952-53. The production of gur has been over 3 million tons in recent years. Taking into account the production of cane sugar, cane gur and palm gur, the total consumption of sugar has varied between 4·0 to 4·5 million tons per annum. On the basis of these figures, the per capita consumption of sugar including gur could be estimated to be nearly 28 pounds per annum.

Inspite of these high levels of production in the cane sugar and the cane gur industry, shortage of sugar has been experienced in the last two years. It has been necessary to import fairly large quantities of sugar in the last year and the programme for next year also envisages import of sugar to the tune of nearly 2 lakh tons. The increased consumption of sugar by the existing population as well as additional population could be met only by allowing for increased imports, unless adequate measures are taken to augment the internal supply of this important item of food. Considerations of acheiving self-sufficiency in foodgrains during the period of the Five Year Plan may not permit of any large scale diversion of land for sugarcane cultivation. Hence national interest would demand the exploitation of an alternative source of sugar production if the drain on foreign exchange by increased imports of sugar has to be put an end to. Palm sugar provides this alternate source of great potentialities.

It has already been pointed out that there are over 5 crores of palm trees spread all over the country. The more or less wide dispersal of these trees provides scope for their exploitation to meet local requirements. On the basis of 1 ton of gur being available per annum from 50 trees, the full exploitation of all the available resources would lead to the production of nearly a million tons of palm gur which is equivalent to nearly 20 to 25 per cent of the total consumption of sugar in the country at present. It is estimated that for the release of one acre of fertile land for food production now occupied by cane it is enough to tap 50 palm trees which can flourish on waste land and bunds of fields requiring neither irrigation nor manuring. The full exploitation of these trees would enable the release of nearly a million acres of land, which is now under

sugarcane for the cultivation of essential foodgrains. No doubt due to the high cost of tapping and fuel, the cost of production of palm gur or sugar does not compare favourably with that of cane sugar or gur. Moreover, the highly dispersed areas over which palm trees exist and the antiquated methods of production would not permit the full exploitation of this important source of wealth in the near future. However, the abundant availability of palms and the increasing demand for sugar are two factors which would indicate the scope for the development of this industry in the long run.

Another factor which should weigh considerably in favour of the development of palm gur industry is the scope it provides for employment on a wide scale among rural workers. As already pointed out, there are 5 crores of palm trees all over India capable of being tapped. On the basis of 25 to 30 trees being tapped by a fully trained tapper a day, the total number of workers who would find employment if all the existing trees are fully utilised would be of the order of one million workers. In addition an equal number of persons may find employment in auxiliary labour. This one factor of this industry providing gainful employment to 2 million persons in the country should be a sufficiently compelling reason for its development even if certain other factors are found to weigh unfavourably in comparison with the cane gur industry.

The enforcement of prohibition in some States would also point to the necessity of developing this industry. The Constitution of India calls for efforts towards the complete prohibition of intoxicating drinks. Since toddy is one of the alchoholic drinks its prohibition is only a matter of time. The enforcement of this policy would bring to the forefront the problem of rehabilitation of ex-toddy tappers. Bombay, Madras and Saurashtra have already introduced complete prohibition in their States. Among other States, Madhya Pradesh Vindhya Pradesh, Mysore and Travancorc-Cochin have introduced partial prohibition. The States of Assam, Bihar, Orissa, West Bengal, Hyderabad, Madhya Bharat and Coorg have no prohibition and the sale of toddy is, therefore, free. The States of Bilaspur, Manipur, and Tripura do not have any palm trees.

In States where complete prohibition has already been introduced, the problem of rehabilitation of ex-toddy tappers is being tackled by State Governments in different ways. With the introduction of prohibition in other States, the problem is bound to assume considerable proportions. The manufacture of gur

from palm juice on a co-operative basis is probably the only sure way in which the problem could be tackled in an effective manner. It has also the additional advantage of maintaining the tappers on their traditional profession and obviates the need for any special training which would be required if these tappers had to be rehabilitated in some other industry.

CHAPTER VII

GUR AND KHANDSARI

Sugar, in one form or the other, has come to be regarded as an essential item of food and is consumed in fairly large quantities all over the world. Apart from being a sweetening agent, it represents the most concentrated form of energy available for human consumption. Being the largest producer of sugar including gur, India occupies a pre-eminent position among the sugar producing countries of the world.

I. Production and Utilisation of Sugarcane

Although the total area under cane in India forms less than two per cent of the cultivated area in the country, the cultivation of sugarcane has assumed considerable importance as one of most important commercial crops in India which plays a significant role in the agricultural economy of the country. It has, however, to be admitted that the growth of cane cultivation in the past did not conform to any uniform or scientific pattern. This has resulted in the unhealthy concentration of cane cultivation in certain regions which are not necessarily the most suitable areas for the development of cane cultivation. The most important cane producing State in India is the Uttar Pradesh which accounts for nearly 50 per cent of the total production. Bihar, Madras, Punjab and Bombay are the other important cane-cultivating States. During recent years, considerable importance is being laid on the development of cane cultivation in Bombay, Madras and other Southern regions which are more suitable for cane cultivation and give better yields of cane.

The production of sugarcane has increased enormously during the last thirty years to meet the growing needs of the country. The total area under sugarcane cultivation at present is over 4 million acres and the production of sugarcane is of the order of 5·6 million tons in terms of gur. The following table would indicate the estimated area under cultivation and the production of sugarcane from 1949-50 to 1952-53 :

Sugarcane Area and Production

(Area in thousand acres)

(Production in thousand tons of gur)

State.	1949-50		1950-51		1951-52		1952-53	
	Area	Production	Area	Production	Area	Production	Area	Production
Assam	59	70	58	68	57	64	66	73
Bihar	379	275	411	309	337	242	361	246
Bombay	178	516	188	543	213	605	186	461
Madhya Pradesh	47	60	45	54	43	53	42	49
Madras	181	500	267	716	260	682	263	700
Orissa	63	111	59	105	61	110	60	112
Punjab	270	302	306	364	359	415	371	414
Uttar Pradesh	2,100	2,634	2,505	2,903	2,965	3,169	2,639	2,646
West Bengal	58	89	53	86	46	82	52	104
Hyderabad	71	146	89	191	100	189	90	175
Madhya Bharat	41	33	39	36	51	43	42	38
Mysore	45	76	45	76	50	88	45	71
PEPSU	55	61	67	76	76	84	76	87
Rajasthan	37	28	41	16	54	11	44	39
Saurashtra	10	15	15	48	20	33	13	24
Other States	30	22	29	24	35	25	25	21
Total...	3,624	4,938	4,217	5,615	4,727	5,895	4,375	5,260

Nearly 80 per cent of the sugarcane produced is crushed for the manufacture of sugar, gur and Khandsari, the remaining 20 per cent being used for chewing, planting etc. The proportion of sugarcane crushed for gur or sugar manufacture in any particular year would depend on the comparative prices of sugar and gur. During seasons when gur prices were high, increased quantities of cane were processed for gur production. On the other hand, the decontrol of sugar has given a fillip to sugar production and larger quantities of cane were diverted to vacuum pan factories at the expense of the gur industry. In 1950-51 about 20 per cent of the total production of sugarcane was utilised by sugar factories while 58 per cent was used for gur manufacture, the remaining 22 per cent being accounted for by the

manufacture of Khandsari, chewing, planting etc. The pattern of utilisation of cane during recent years is indicated in the table below :

Utilisation of Cane

(in percentage of total production.)
(Nov.-Oct.)

	1938-39	1947-48	1948-49	1949-50	1950-51
1. Cane used in factories.	16·2	18·2	21·0	20·20	20·0
2. Cane used for manufacture of gur.	64·5	60·0	56·4	55· 9	58·0
3. Cane used for other purposes including khandsari, chewing, seeds for planting etc.	19·3	21·2	22·6	23· 9	22·0
	100·0	100·0	100·0	100· 0	100·0

It would be observed that whereas the percentage of cane utilised for gur production remained high in 1938-39 and upto 1947-48 it showed a perceptible decline in 1948-49 and then slightly increased in 1950-51. From 1948-49 to 1951-52 gur production has steadily increased. The fluctuating conditions in the sugar market are largely responsible for this erratic production trends in the gur industry. The importance of maintaining a scientific price relationship between sugar and gur in any rational scheme for the development of gur industry cannot therefore be minimised.

II Brief survey of the Industry

The manufacture of gur is an important cottage industry responsible for the utilisation of nearly 60% of the total cane crop and the production of more than thrice the quantity of sugar produced by mills. As such it is directly responsible for sustaining a large number of agricultural and rural workers and makes a significant contribution to strengthening the rural economy. Moreover, the indus-

try caters to the needs of the bulk of the population and provides a substitute for sugar at rates within their reach.

Gur is an excellent article of food and is believed to have certain special nutritive values. Unlike sugar, gur retains practically all the mineral and other nutritive constituents contained in the cane juice. An average sample of gur contains 50 to 80 per cent of sucrose, 10 to 20 per cent of inverted sugar and smaller percentage of mineral salts, ash and moisture. It is stated that the mineral content of gur, however small, makes it a superior article of diet as compared to sugar.

The gur industry is essentially concentrated in U.P. which accounts for more than 50 per cent of the total production of gur in India. Bombay, Hyderabad, Punjab and Madras are the other important gur producing States. Although Bihar is also a major cane producing state, 70 to 80 per cent of the cane produced in that State is diverted for sugar production and little is available for gur manufacture.

The production of gur has varied from year to year, depending on the availability of cane and price of gur. The maximum production of gur was achieved in 1937-38, the estimated production in that year being 4,364,000 tons. In recent times, the production has varied between 2·8 and 3·1 million tons. The production of cane gur in recent years is indicated in the table below:

Production of gur

(in thousand tons)

Year (Nov.-Oct.)	
1947-48	3,492
1948-49	2,830
1949-50	2,743
1950-51	3,132
1951-52	3,134
1952-53	2,877

Most of the gur produced is consumed directly. However, a small percentage is utilised for industrial purposes. In 1941, this quantity was estimated to be about 5% of the total production of gur, another 5% being utilised for stock feeding.

According to the General Census Returns, the total number of persons employed in gur manufacture in 1951 was of the order of 70,000. This, however, does not indicate a clear idea of the total employment provided by the industry, since for census purposes only such persons are enumerated whose main occupation is gur manufacture, leaving out a large number of agriculturists who manufacture gur as a supplementary occupation. The exact quantum of employment provided by this industry is thus not available but it is likely to be of the order of 5 lakhs.

The last few decades have witnessed the development of the sugar mill industry. There are at present nearly 160 sugar mills in the country with a total annual capacity of 15·5 lakh tons of sugar. As is to be expected, a large majority of them (more than 70) are located in U.P. while 30 of them are situated in Bihar. The production of sugar in recent years has been over a million tons. The maximum production of 14·6 lakh tons was achieved in 1951-52. The duration of the crushing season, the price of cane and the comparative price of sugar and gur are important factors that decide the quantum of production in each year. The indigenous production of sugar has been inadequate to meet the growing demand for this commodity and it has been found necessary to import sugar from foreign countries. The quantity of sugar imported in 1952-53 was 54,000 tons and in 1953-54 two lakh tons of sugar are expected to be imported. The region-wise break up of sugar and gur production in recent years is indicated in the table below :—

Production of sugar and Gur.

(Thousand Tons)

	1949-50		1950-51		1951-52	
	Sugar	Gur	Sugar	Gur	Sugar	Gur
Bihar	222	-	225	34	225	N. A.
Bombay	111	312	122	322	158	334
Hyderabad	20	319	24	373	39	414
Madras	62	228	92	273	98	302
U.P.	509	1,381	593	1,602	840	1,571
Others	55	503	60	528	138	513
Total	979	2,743	1,116	3,132	1,498	3,134

III Consumption and requirements

Compared to the consumption of sugar in certain advanced countries, the average consumption of sugar including gur in India is rather low. Thus, for example, in 1949-50 the average per capita consumption of sugar has been estimated at 143 lbs. in Australia, 106 lbs. in the U.S.A. and 92 lbs. in the U.K. Against this, the per capita consumption of sugar including gur in India is only 26 to 28 pounds per annum. The following table would indicate the total quantities of sugar and gur available for consumption and the average rates of per capita consumption in recent years.

Total and per capita consumption of sugar and gur.

Year	Total consumption			Per capita consumption		
	Sugar (lakh tons)	Gur (lakh tons)	Total (lakh) tons)	Sugar lbs.	Gur lbs.	Total lbs.
1943-44	12.36	28.33	40.99	6.5	23.8	30.3
1944-45	12.36	28.23	40.59	8.0	22.1	30.1
1947-48	10.45	34.92	45.37	7.3	22.2	29.5
1948-49	11.82	28.37	40.19	9.0	17.5	26.5
1950-51	11.95	31.32	43.27	7.6	19.4	27.0
1951-52	12.63	32.40	45.03	7.9	20.3	28.2
1952-53	17.46	28.77	46.23	6.9	17.9	28.8

Even though the average per capita consumption is low compared to certain advanced countries, it may be pointed out that there are considerable variations in different regions of the country on the quantity of sugar and gur consumed. It is interesting to note that gur consumption is comparatively high in the producing States like U.P., Bombay and Punjab, while the consumption is particularly low in the southern parts of the country. Certain estimates of gur consumption in various regions of the country have been worked out for some recent years and this is indicated in the table below.

Estimated State-wise per capita consumption of gur in lbs.

State	1941	1942	1943	1944
Uttar Pradesh	49.1	30.1	34.9	40.1
Punjab	33.6	29.3	29.4	36.0
Bihar	6.2	11.4	5.4	10.4
West Bengal	15.4	14.1	12.8	15.5
Madras	12.7	7.4	8.9	12.3
Bombay	23.0	31.7	35.5	40.8
Assam	10.5	9.2	10.2	9.7
Madhya Pradesh	13.3	9.8	10.6	9.6
Orissa	10.5	9.8	9.9	10.8
Delhi	4.9	4.7	4.6	4.5
Mysore	9.2	10.3	13.2	11.3
Hyderabad	11.1	8.1	8.3	8.2
Rajaputana	17.0	11.1	11.3	8.9
All India	19.7	16.1	16.9	19.4

The variations in the per capita consumption of gur and sugar in certain urban areas in 1937-38 is indicated below. It would be evident from the table that whereas the urban areas show a preference for crystal sugar, the consumption in rural areas is overwhelmingly in the form of gur.

Variations in the per capita consumption of gur and sugar in certain urban areas in 1937-38

State	Gur		Sugar	
	Urban areas	Total for the States	Urban Areas	Total for the State
	lb.	lb.	lb.	lb.
U.P.	13.2	53.9	58.1	8.3
Punjab	18.0	23.3	50.4	12.8
Bengal	15.4	22.8	85.5	6.3
Madras	8.9	12.1	51.2	4.4
Bombay	12.4	14.4	81.4	16.3

During recent years, the growth of urban population and the change in the tastes of people have been responsible for a shift in the consumption pattern in favour of sugar at the expense of gur. As long as restrictions on the consumption of sugar were in force, the demand for sugar was limited to nearly 12 to 13 lakh tons per annum. But the recent decontrol of sugar has resulted in an enormous increase in this demand, and according to recent estimates it is expected that the total requirements of sugar by 1955-56 would be of the order of 17 to 18 lakh tons. The increased consumption of crystal sugar is likely to affect the demand for gur to some extent. Nonetheless, the growing population and the increased standard of living among the rural population is bound to step up the demand for gur simultaneously. In evolving a programme for increasing the sugar producing capacity in the country, adequate care has to be exercised to see that such increased capacity for sugar production does not result in unduly curtailing the scope for the expansion of the gur industry.

IV. Problems of the Industry

(i) *Unstable Market Conditions.* One of the main impediments in the smooth development of the gur industry relates to the highly unstable market conditions the industry had to face in recent years. The conditions in the sugar industry have been largely responsible for wide fluctuations in the fortunes of the gur industry. It has been noticed that the area under cane had been fluctuating considerably from year to year as also the prices of cane, gur and sugar. Though the gur industry has enjoyed comparatively prosperous conditions in certain years, it had also to undergo considerable hardship during periods of price decline. The steep variations in prices have not benefited the cultivator or the workers in the industry but have only increased the profits of the middleman and the hoarder. In the long run such unsteady conditions are bound to be deterimental to the healthy development of this industry. The prosperity and the future of the sugar industry as well as those of gur would depend upon the stabilisation of the price of cane, sugar and gur on a rational basis.

Of late, a good deal of emphasis has been laid on measures that are conducive for augmenting the production of crystal sugar. Such measures, though beneficial to the sugar industry, unless closely co-ordinated with measures that are necessary for the development of gur industry, are likely to result in considerable hardship to the gur industry. The possibility of increasing consumption and expansion of markets for sugar as well as gur would also depend on the sta-

bilisation of prices of cane, gur and sugar on a scientific basis. The price of sugar should bear a definite relationship with the price of gur, so that there is no undue diversion of cane from gur industry to sugar.

(ii) *Raw materials.* The supply and price of cane are other important factors in the development of gur industry. The supply of cane in recent years has been highly erratic. The fixing of our unremunerative price for cane has sometimes resulted in the curtailment of production and consequent inadequate supply of cane. At other times, high price of sugar has resulted in the diversion of cane to the factories at the expense of the gur industry. The need to stabilise the price of sugar and gur has already been pointed out. Cane supplies being limited, the establishment of more sugar mills would only result in the shortage of cane to the gur industry. Such a step, while not augmenting the total available supplies of sugar including gur only transfers the problem of shortage from one sector to the other. The problem therefore has to be tackled from the point of view of augmenting the total supplies of sugar including gur by producing more sugar-cane.

Another factor to be taken into account is the need to bring down the price of sugarcane. Since the cost of raw material forms the major proportion of the cost of production of gur and sugar, any reduction in the price of sugarcane is bound to be reflected in the lower price of gur and sugar. Such a step is bound to expand the demand for sugar as well as gur. The possibility of reduction in sugarcane prices is closely linked with higher yields of sugarcane per acre. At present nearly 90 per cent of the total cane area is concentrated in the U. P., Punjab and Bihar which are really not the most suitable areas for cane cultivation. This results in the lower yield of cane per acre and the consequent high prices. The tropical areas in the South are found to yield nearly three times the output of sugarcane per acre than that of the Northern regions. In the interests of developing both sugar as well as gur industry, it is absolutely essential that any increase in the cultivation of cane should be encouraged in these regions where the yield of cane is higher.

(iii) *Poor technique and low efficiency.* In view of the increasing popularity of sugar, gur can hold its own only if adequate measures are taken to bring down the cost of production and make it available to the consumer at reduced rates. The manufacture of gur is still carried on in a primitive manner leading to considerable inefficiency and higher costs of production. The extraction of

juice is lower than in sugar factories. The gur producers are also ignorant of the use of juice clarificicants which affects the quality of the final product. There is at present no agency to educate them on simple modern scientific methods which would lead to considerable improvement in the yield and quality of gur. The introduction of improved kolhus, pans and other gur manufacturing implements such as percolators, moulds, juice strainers etc., construction of improved furnaces, use of cheap and efficient clarifying agents and improvements in the juice boiling technique are some of the measures that would bring about the necessary improvements in the gur industry.

V. Future Programme

Scope of the industry : As already pointed out, the per capita consumption of sugar including gur is low at present. This can be attributed to the low purchasing power of the people. With the rising standard of living, the demand for both sugar as well as gur is bound to increase.

The increase in the production of sugar as well as gur is closely linked with the availability of cane. The First Five Year Plan envisages only a moderate increase in the production of sugarcane. The immediate scope for expansion of gur industry is thus limited to the supply of sugarcane set by the target in the Plan which envisages an increased production of 700,000 tons of sugarcane (in terms of gur) over the 1950-51 level of 5·616 million tons. The production of sugar in 1950-51 was 1·1 million tons and this is expected to be stepped up to at least 1·5 million tons by 1955-56. If we take into account the additional sugarcane required for this increased production of sugar, the scope for the expansion of the gur industry in the period of the Five Year Plan is limited to the remaining quantity of 300,000 tons of additional sugarcane available. This is a modest increase hardly sufficient even to provide the required quantity of gur for the additional population at the existing rates of consumption. Any increase in the mill capacity during the Plan period is bound to curtail the availability of sugarcane for gur manufacture and result in bringing down even the existing level of gur consumption. In the interests of maintaining the production of gur, no further increase in the capacity of sugar mills should, therefore, be envisaged during this Plan period. Proposals for the expansion of the milling capacity could be considered in the Second Five Year Plan when greater provision for the production of sugarcane has been made. It may also

be pointed out that gur is an excellent substitute for sugar and it would not be proper to fritter away the limited foreign exchange in the import of sugar when adequate quantities of gur are available in the country.

Another aspect regarding the future development of the gur industry is its close relationship with the development of palm gur industry. No doubt considering the wide market that is available, there is room for the development of both cane gur as well as palm gur simultaneously. At the same time, it would appear that the immediate scope for development is more in favour of palm gur than cane gur, since considerations of limited availability of land would not permit any large scale expansion of land under sugarcane cultivation. A co-ordinated programme of expansion of palm gur and cane gur industry has, therefore, to be worked out.

The development of gur industry is further related to the development of proper markets. It has been made clear earlier that the consumption of gur is of a considerably higher order in those areas where gur is locally produced. It is to be expected that if gur is produced in abundant quantities in the southern regions, the consumption in these areas is bound to go up. Such a development is also desirable from the point of view of the increased yields of sugarcane possible in these regions. The future development of gur industry should, therefore, lay considerable emphasis on fostering this industry in the southern regions, like Bombay, Madias and Hyderabad.

Khandsari

I. Brief Survey of the Industry

The manufacture of Khandsari has been a very old industry in this country. Indeed it was the only form of indigenous sugar produced before the advent of the modern sugar industry in India.

The Khandsari industry is chiefly concentrated in the Rohilkhand, Meerut and other divisions of the Uttar Pradesh though small quantities of Khandsari sugar are also produced in parts of Bihar, Bengal, Punjab and certain other comparatively unimportant tracts. In view of the highly dispersed nature of the industry, it is difficult to arrive at a correct estimate of the annual production of Khandsari sugar. It is, however, known that the quantity of Khandsari sugar manufactured from cane has varied considerably in recent years. It is estimated

to be of the order of 1 lakh tons to 1·75 lakh tons, nearly two-thirds of which is produced in U.P. The annual production of Khandsari sugar since the grant of protection to the sugar industry in 1931-32 to 1951-52 has been of the order shown below :—

Year (Nov.-Oct.)	Production (in lakh tons)	Year (Nov.-Oct.)	Production (in lakh tons)
1931-32	2·50	1941-42	0·91
1932-33	2·75	1942-43	1·95
1933-34	2·00	1943-44	1·37
1934-35	1·50	1944-45	1·14
1935 36	1·25	1945-46	1·06
1936-37	1·00	1946-47	0·96
1937-38	1·15	1947-48	1·05
1938-39	0·92	1948-49	1·13
1939-40	1·14	1949-50	1·75
1940-41	1·83	1950-51	1·25
		1951-52	1·00

Source : Indian Central Sugarcane Committee.

Although with the establishment of a large number of sugar factories, the production of Khandsari has shown a marked decline (from available data, the production of Khandsari has gone down by 50% between 1931-32 and 1950-51), the Khandsari industry has been able to exist side by side with the sugar industry on account of certain advantages it enjoys over the mills. Firstly the capital on the machinery required for the manufacture of Khandsari sugar is only a fraction of the capital required for the installation of a sugar factory and secondly the operation of a Khandsari plant does not require technical skill of a high order. These factors have contributed to the establishment of Khandsari units near cane fields which are far away from railheads. As *rab* which is the raw material for Khandsari is prepared in the villages, Khandsari units do not have to bear the transport charges for the movement of cane to the factory as in the case of sugar mills. There is also a specific demand for Khandsari for ceatain special purposes like the manufacture of sweets by halwais, preparation of *sarbats* etc. One reason why the *Halwais* prefer Khandsari is probably the cheepness of Khandsari as compared to factory sugar.

But one of the main reasons why Khandsari continues to be manufactured is the wide margin between the prices of factory sugar and of gur. This margin provides the necessary scope for the manufacture of Khandsari as it can approximately fetch the same prices as factory sugar and give better income than gur.

There has been some controversy as to whether the Khandsari industry as it exists today is a cottage industry beneficial to the cultivator and the villager. No doubt a large number of Khandsari units are owned and operated by middle-class capitalists in towns. It is contended, however, that 40% of the total Khandsari is produced in the villages and out of the 60% produced in the towns, roughly 75% of the operations are carried out in the villages. Khandsari thus provides additional part-time and seasonal employment in the villages and thus strengthens the village economy. It is also possible to organise co-operatives of cultivators which can undertake the manufacture of Khandsari in the midst of cane fields.

Another criticism that has been levelled against the khandsari industry refers to the wasteful nature of the process involved. Under the present methods of production, the recovery from 100 maunds of cane in khandsari and gur as compared to that in sugar mills is as follows :—

In sugar mills.	*In khandsari system.*	*In gur manufacture.*
1. Sugar 9.85 mds.	A. Sugar 5. 25 mds Gur 3. 58 mds Molasses 2.64 mds. ——— 11.47 mds. (including moisture)	11 mds including moisture.
2. Molasses 3.49 mds. (unfit for human consumption and should not be taken into consideration)	B. 1st sugar 4. 95 mds. 2nd sugar 1.27 mds. Molasses 5.26 mds. ——— 11.48 mds. including moisture.	

While the sucrose recovery in the khandsari is admittedly low as compared to that in the factory, the total edible substances recovered in the khandsari are not lower, in spite of the initial low recovery of juice obtained in the bullock driven cane crushers. This is because the molasses of the khandsari are all edible; in fact, all khandsari molasses are used for this purpose at present by the poorer sections of the community while the factory molasses are non-edible and are at present used either for processing of tobacco or for the production of power alcohol.

The recovery of sugar in the khandsari method is adversely affected at two points : (i) during the extraction of juice, and (ii) during the extraction of sucorse from can juice.

Recovery of sucrose from 100 maunds of cane.

In factories	*In khandsari*
Juice 80 maunds	62.5 maunds.
Sucrose 9.25 maunds	6.5 maunds.

This calls for a research programme both for improving the crushing efficiency as well as the method of recovering sucrose from *rab*.

II. Difficulties of the Industry

The khandsari industry is experiencing considerable difficulty in getting railway transport facilities on account of the existing low priority enjoyed by the industry. This question was considered at the annual general meeting of the Indian Central Sugarcane Committee held on February 27, 1953. The Gur and Khandsari Sub-committee of the Sugar Cane Committee recommended that for purposes of movement, gur and khandsari should be treated at par with crystal sugar. The main Committee adopted the recommendation of the Sub-committee but no decision seems to have been taken by the authorities so far.

Another difficulty which the industry is faced with is the recent application of the Factories Act to the Khandsari Industry. The main handicap relates to the requirements of factory buildings of particular specifications. As most of the khandsari factories are being run in old houses, it is hardly possible for the factory owners to satisfy the requirements of the Act. What is more, the application of the Act is being extended to rural areas where different culti-

vators operate on their kanchi units of Khandsari in the same compound and are thus brought under the Factories Act. There are hardly any factory conditions obtaining in these units but still according to the letter of the law, they come under the purview of the Act. This has created a certain nervousness among the khandsari manufacturing establishments. This question needs to be examined more closely.

The greatest difficulty of the industry, however, lies in the fact that no systematic and sustained effort has been made for improving the technique and efficiency of its processess. Some effort was made at Bilary in Moradabad district to evolve a manufacturing process which improves the sugar recovery from molasses but as the process involves sulphitation, the molasses become non-edible, as in the case of factory molasses. As is evident, the greatest need for improvement in this connection is with regard to raising the technical efficiency of the cane crushers. There is scope also for improving the manufacturing process. A development programme for gur and khandsari should take up these items for immediate attention.

CHAPTER VIII

HANDMADE PAPER

The importance and significance of paper in communicating ideas and thoughts and preserving and spreading knowledge needs no emphasis. It would be no exaggeration to say that the cheap and abundant availability of paper has been the most important single factor in spreading knowledge among mankind. The emphasis that is being laid on education and literacy is bound to increase the demand for paper to a considerable extent. Paper, in one form or the other, has several industrial uses also. Thus the paper industry finds an important place in the national economy along with food, clothing and shelter.

Paper is believed to have been invented by the Chinese nearly two thousand years ago. In ancient times, barks and leaves of trees were used as writing materials in India. Letters, invitation books, documents etc., were all written on "Tal Patra" and "Bhurj Patra". It was in the Mughal period that the art of producing paper spread in India. The demand for paper at that time was limited due to learning being confined to Brahmins mainly and the art of printing being unknown. The industry was carried on by artisans called Kagzis or Kudis. The industry flourished mostly in the Punjab and Kashmir.

The industry underwent a major revolution in Europe with the introduction of mechanisation to meet the growing demand for paper for writing and printing purposes. However, paper making by hand was maintained and is still being maintained even in highly industrialised western countries on account of certain unique properties of handmade-paper which the mill made paper does not possess.

The import of large quantities of machine made paper into India from Europe resulted in the decline of the indigenous hand made paper industry, which could not stand the competition of the imported papers both as regards price as well as quality. The industry would have completely died out, had it not been for a limited demand for certain varieties of papers such as handmade paper required

for account ledgers, religious scriptures, horoscopes etc. Considerable fillip to the industry was also given by Mahatama Gandhi who encouraged the revival of this important village industry under the All-India Village Industries Association, Wardha.

Handmade paper has been proved to possess greater strength and durability. Thus handmade paper is indispensable for preparing documents which are required to be preserved for a long period. Three hundred years old samples of handmade paper have been preserved without any deterioration on the surface texture. The ancient documents pertaining to land and properties and state procedures are still found intact and unspoiled with many people in India. Currency notes are still printed on handmade paper in many European countries. Besides strength and durability, paper-making by hand offers an excellent scope for producing artistic surface effects which cannot be controlled on a paper machine. Watman's world famous drawing papers and filter papers are examples of these unique properties of handmade papers.

1. Requirements and Supply

The consumption of paper in India is extremely low, judged by international standards. Against an annual average per capita consumption of 284 lbs of paper in the U.S.A., 150 lbs in the U.K. and Sweden and 24 lbs in Japan, the figure for India is as low as 1.1 lb. With the growth of literacy, commerce and industry and improved standard of living, the comsumption in India is, however, bound to go up rapidly. There is thus extensive scope for development of the paper industry in India. Even at a moderate per capita consumption of 10 lbs per annum, the annual requirements of paper would amount to over 1.5 million tons.

The existing demand for paper, excluding newsprint, is estimated to be of the order of 1,40,000 tons. The major proportion of demand is met out of indigenous production, supplemented by substantial quantities of imports. Out of the total quantity of indigenous production, the share of the handmade paper industry is negligibie.

There are at present 18 large scale paper mills in the country. The production of paper by these mills and the quantity of paper imported (excluding newsprint) in recent years is indicated in the table below ;—

Production and Imports of Paper

(Thousand tons)

	Production	*Imports*
1950-51	92·9	32·0
1951-52	110·8	36·0
1952-53	117·0	47·0

The production of handmade paper has been only about 120 to 130 tons per annum. This would indicate the need for considerable development in the handmade paper industry so that a greater share of the indigenous requirement could be met by this section of the industry.

Inspite of the considerable development that has taken place in the paper industry by the establishment of a number of paper mills, the imports of certain special varieties of paper still continues. The exact quantity of special handmade paper imported into the country is not available. There is no doubt that such imports are quite considerable. An immediate measure of encouragement that could be given to the handmade paper industry lies in the complete ban of the varieties of handmade paper at present imported, so that the existing production centres of handmade paper could meet this demand. It should not be difficult to achieve the quality of the imported paper by the indigenous manufacturers.

II. Brief survey of the Industry

There are at present 30 paper making centres working under the guidance of the All-India Khadi and Village Industries Board. Their names and locations are given below :

Name			*Place*	*Number of persons employed*	*Present production (in tons)*
ASSAM	1.	Government Paper Section	Shillong	3	0·5
	2.	Towang Sela Sub-Agency	Shillong	—	—
BOMBAY	1.	Handmade paper Research Centre	Poona	50	5·0
	2.	Kagdipura Papermakers Coop. Socy. Ltd.	Erandole	10	1·0

Name		Place	Nuuber of persons employed	Present production (in tons)
	3. Erandole Taluka Gramodyog Sangh	Erandole	10	1·0
	4. Kalamkhush handmade paper centre	Ahmedabad	28	6·0
	5. Handmade paper Ltd.	Oglewadi	60	10·5
	6. Standard pulp and paper factory	Nasik	10	1·0
	7. Handmade Paper Institute	Rajpur	7	0·5
	8. Yervada Central Prison	Poona	20	1·0
	9. Junnar Hathkagad Sahakari Sangh Ltd.	Junnar	50	12·0
MADRAS	1. Pulp making unit	Taniore	4	2·0
	2. Gram Udyog Centre	Kalipathi	12	0·5
	3. Anji Karai Ainavaram	Madras	40	2·0
	4. Paper Centre, Dist. Local Board	Tanjore	—	—
MADHAYA PRADESH				
	1. Gram Udyog Vibag, Serva Seva Sang	Wardha	35	4·0
	2. Kagaj Kendra Belpur	Amaravati	5	—
	3. Udyog Mandir	"	10	1·0
	4. Handmade Paper Centre	Hinganghat	5	—
	5. Janata College	Amaravati	10	1·0
UTTAR PRADESH				
	1. Gram Udyog Trust Pukharayany	Kalpi	50	6.0
	2. Govt., Handmade Paper Tuition Class	"	10	1.0
WEST BENGAL				
	1. Handmade Paper Section Directorate of Industries	Calcutta	20	6.0
	2. Artisan Production Centre.	Mainan	60	2.0

Name	Place	Number of persons employed	Present production (in tons)
HYDERABAD			
1. Kagdipura Paper Centre	Aurangabad	80	10.0
2. Central Laboratories for Scientific and Industries Research	Hyderabad	10	2.0
MYSORE 1. Government Paper Centre	Banglore	10	1.0
RAJASTHAN			
1. Handmade Paper Makers Co. Socy.	Sangner	300	45.0
2. Paper Centre	Kotah	10	1.0
SAURASHTRA			
1. Pyara Bapu Karyalaya	Jonagarh.	5	1.0

At present the handmade paper industry partially employs 944 persons. The present total production of all the centres is 127 tons per year, as given below :

Grade	Quantity	Rate per ton Rs.	Total value Rs.
High Grade Paper	80 tons	5,600/-	4,48,000/-/-
Common Utility Paper	20 ,,	3,000/-/-	60,000/-/-
Blotting Paper	27 ,,	2,000/-/-	54,000/-/-
		Total	5,62,000/-/-

III. Technique of preparing handmade paper

In the early stages of the development of this industry, all the processes right from converting basic raw materials into pulp to bleaching, lifting, drying, sizing and finishing of papers were done by hand employing implements and equipments of very crude designs which could be locally made by the artisans themselves. The texture and finish of paper produced with those equipments did not compare favourably with mill made paper with the result that the demand for handmade paper declined. Whereas the Indian artisan rigidly adhered to the same old process due to lack of scientific and technological knowledge, manufacturers of handmade paper in western countries and Japan

adopted all preliminary and finishing processes according to improved technology, retaining only the process of lifting paper by hand. Thus foreign paper possesses the combined features of millmade and handmade paper.

In order to improve the quality of handmade paper, the process has been modified to a considerable extent by the work carried on by the All-India Village Industries Association, and a number of technological improvements has been introduced in the earlier processes. The preliminary stages in the preparation of pulp and the sizing and finishing of paper are now often carried out by machines. Besides, vomiting type boilers, improved types of vats, screw presses, wire moulds in place of bamboo screens, felts, chemical processing and introduction of water marks, Platter Calender in place of Burmisher and Counch Shells are all successfully introduced during the period of the revival of this industry as a result of which it has become now possible to produce all varieties of high grade paper along with common utility paper and blotting paper with much improved texture, appearance and surface finish.

V. Problems of the industry

The present undeveloped position of the handmade paper industry could be directly attributed to the lack of technical improvement in the manufacture of paper. The primary objective therefore should be to render technical assistance in respect of equipment as well as imparting training to a large number of workers to facilitate the manufacture of goods of quality in adequate quantities. Research also needs to be conducted with a view to exploring the possibilities of using paper for such purposes as the manufacture of rain-coats, window screens umbrella draperies etc.

Even the few existing centres of production of handmade paper find it difficult to market their products in view of the competition from imported varieties. Our handmade paper industry is in a position to supply varieties of paper such as those required for legal documents, stamp paper, drawing paper, filter paper, boards for mounting etc. Imports of these varieties of paper should not be permitted in the interests of developing this industry. If this is done, the handmade paper industry in India is capable of increasing the production of these varieties of paper to meet the total requirements in a short time.

VI. Programme of development

(a) *Scope for development.* In an earlier paragraph it has been indicated that the existing consumption of paper is meagre and is likely to develop rapidly in the near future. Viewed in this context, there is immense scope for the development of the paper industry. The scope for the handmade paper industry is most extensive as the basic raw materials for paper pulp are distributed throughout the country in small quantities.

The chief raw materials used in paper making are of fibrous vegetative origin. Amongst the wild and forest growth in India, there are numerous fibrous plants used for paper making. Apart from bamboo and Sabai-grass which form the chief raw materials for big paper mills, there are several other plants in abundance growing in the vicinity of villages which can be utilised with success for pulp making. The advantage of the handmade paper industry lies in the fact that whereas these fibrous plants are scattered all over the country and their utilisation for paper by centralised paper mills may not be economical on account of expensive transport charges, the handmade paper units which will be developed in rural areas can utilise such local products with great convenience and can bring into economic utility the otherwise wasted raw materials thus turning waste into wealth.

(b) *Programme of the Board for 1954-55.* During 1953-54 the Board has already done some preliminary work in connection with the development of the handmade paper industry. Apart from assisting the existing centres by way of supplying equipment, grants and subsidies and training workers, the Board has also been able to expand the market for handmade paper to some extent. The Government of India, for example, have started purchasing handmade paper for certain purposes.

The programme for 1954-55 envisages the establishment of 15 new centres, thus raising the total number of production centres to 45. The artisans and other workers will be trained for the production of high grade paper. Paper will be standardised in all the centres. A central marketing organisation will be created. The production of standard varieties of all grades of paper with improved finish and texture achieved through controlled production with adequate working capital advanced to the production centres will enable the central marketing organisation to step up sales. The purchase of the stores and raw materials

on behalf of the centres through the Central Office organisation, standardisation of wages, control of labour and production, improved technique of pulp making and paper lifting and of other processes will bring down the cost of paper.

Production during the year 1954-55 is expected to be 400 tons. The total number of workers employed in this industry will be 2000, as per details given below:

Item	*Quantity*	*Rate per ton*	*Amount*
High Grade Paper C	140 tons	@ Rs. 5,600/-	Rs. 7,84,000/-
Common Utility	200 ,,	@ Rs. 3,000/-	Rs. 6,00,000/-
Blotting paper	60 ,,	@ Rs. 2,000/-	Rs. 1,20,000/-
		Total...	Rs. 15,04,000/-

Research and Experiment

Intensive research work is still required for the production of all varieties of paper, particularly filter and drawing paper and for the utilisation of all the basic raw materials available in the country. The handmade paper research centre at Poona, the Central Research Laboratory at Hyderabad and the West Bengal Government Centre at Calcutta, carry on research work but their activities will have to be strengthened and co-ordinated.

Self-sufficiency in Schools

During the year 1953-54, it was decided to introduce handmade paper as a craft in 50 selected schools. Many schools have expressed their desire to take up this craft and it has been decided to introduce it in 50 more schools during the year 1954-55. The students will collect the waste materials, will produce paper and will utilise the same for their own use. The basic idea behind this scheme is to train the young generation to take an interest in the craft. A student of 12 years age can easily produce 10 lbs. of paper in a year. The cost of equipment would come to Rs. 500/- per school.

CHAPTER IX

VILLAGE LEATHER INDUSTRY

The processing of hides and skins and the manufacture of leather goods are traditional village industries. The village leather industry has been one of the principal industries in the country's economy and provides employment to a substantial section of the depressed population. Although large scale factories have come into existence in important cities during the last few decades, the bulk of production is still carried on in villages by the Chamar community.

It is an irony of fate that in India the workers engaged in leather industry belong to a community which is treated with cruel neglect and are made to suffer social disabilities. Leather and leather products are needed in every walk of life, but leather workers engaged as flayers, curriers, tanners or shoemakers are neglected in every sphere of their activities. Those who deal in hides and leather and leather goods are not looked down upon whereas the workers are. The continued social injustice which has been inflicted upon one of the most hard working and meek class of people has resulted not only in the degradation of this community but in the decline of leather industry as well.

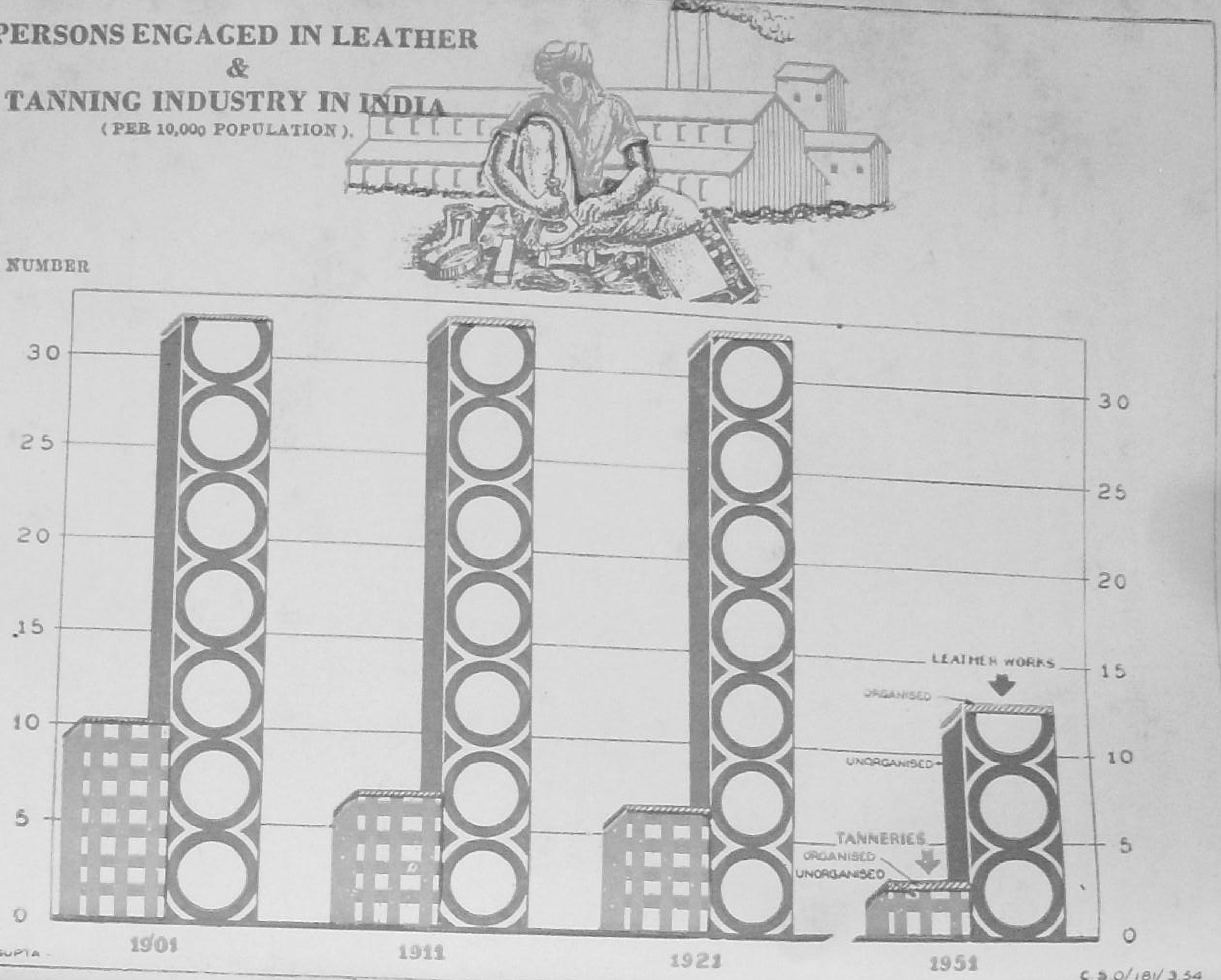
A variety of products are manufactured from leather and the demand for leather products is also considerable. The principal use to which leather is put is in the manufacture of footwear. There is also a steady demand for leather goods for various industrial uses like beltings, straps, pickers, picking bands etc. Bags, suit cases and innumerable other articles of every day use are also manufactured from leather.

I. Brief Survey of the Industry

According to the 1951 livestock census, there are 150 million cattle and 43 million buffaloes in the country. According to the Hide Marketing Report, 1943, the death rate of cattle is usually calculated at 11 per cent. On the basis of full utilisation of all the dead cattle and buffaloes, it should be possible to produce 16.5 million pieces of cowhides and 4.7 million pieces of buffalo hides per annum, equivalent to nearly 26.0 million pieces of cowhides.

PERSONS ENGAGED IN LEATHER & TANNING INDUSTRY IN INDIA

(PER 10,000 POPULATION).



The share of the village industry in the production of hides and skins is obviously considerable, although the dispersed nature of the industry makes it difficult to have accurate information on the total quantity of hides and skins so processed. The production of the organised sector of the industry is, however, known. According to the Monthly Statistics of the Production of Selected Industries in India, the production of hides and skins by the organised tanneries are as follows :

Production of hides and skins

(in thousand tons)

	Chrome Tanneries	Vegetable Tanneries (buffaloe & Cow) expressed in terms of cow hides	Total
1950	495.6	1514.4	2010.0
1951	879.6	1104.0	1983.6
1952	650.4	1578.4	2228.8
1953 (11 months)	628.3	1153.2	1781.5

It would be observed that the production of the organised industry is only of the order of 2.0 to 2.2 million hides per annum. Even assuming a maximum of 3.0 million hides being processed by the big industrial ventures and other machine tanneries as of the Chinese at Calcutta, nearly 23.0 million hides are still processed by the village industry. In terms of percentage, the share of factory tanned hides come to less than 12, the remaining 88 per cent of the total production of hides being directly contributed by the village industry.

The leather industry (including footwear) provides employment to nearly 7 lakhs workers. According to the Census of Manufactures, 1951, the organised leather industry employed nearly 31,000 workers whereas the employment provided by the rural industry was of the order of six and a half lakhs. The volume of employment has shown a definite decline over the last five decades. The total number of workers employed in the leather industry was estimated at 11.5 lakhs in 1901, 10.7 lakhs in 1911, 10.8 lakhs in 1921 and 9.0 lakhs in 1931,

II. Technique of the Industry

The tanning industry in India can be broadly divided into two sections (a) Vegetable or Bark tanning (b) chrome tanning. Whereas chrome tanning is almost exclusively adopted by the organised sector of the industry, vegetable tanning is adopted both by village and organised factories. A large share of the quantity of leather produced by the Chamar community is the Bag tanned leather. Bag tanning is a particular process of vegetable tanning in which the limed hides are sewn in the form of a conical bag, one end of which is kept open. The bag is filled with tan stuff and water or used tanning liquor is allowed to percolate through it. It is a quick tanning process. The difference between the bag tanned hide and pit tanned hide is that the bag tanned leather is light and is sold by the surface area, whereas the pit tanned leather is sold by the weight and is heavier for equal square foot of surface. The report of the Panel on Leather and Leather Goods (1947) makes the following observations on the process of bag tanning :

"It is a vegetable tanned crust leather produced by the chamar by the indigenous methods of tanning commonly known as bag tanning. It is done practically all over India by chamars but it is more concentrated in the Punjab, where 5000 to 6000 chamars are reported to be engaged on it. The most conspicuous centre in the Punjab is the area round about Jullundur. Appreciable quantities of bag tanned leather are also produced in Lahore, Multan, Sialkot, Wazirabad, Shahabad and Karnal.

"In normal times according to the report on the Marketing of Hides, the Chamars tanned annually 91 lakh pieces of buffaloe and cow hides by the indigenous process of tanning, which is chiefly bag tanning. The value of the bag tanned leather before the war could be put as Rs. 3½ crores annually. During the recent war, bag tanners were very active so much so that they made it very difficult for organised tanners (who were making leather for defence services by pit tanning under Government Control) to get adequate quantities of buffaloe hide"

Apart from producing bag tanned leather, the cottage industry also produces what are known as tanned E. I. kips, goat and sheep skins. The intrinsic value of this lightly tanned Indian hides and skins has been responsible for a steadily increasing foreign demand for this type of leather. The industry is chiefly con-

centrated in Southern India. Certain quantity of tanned kips is also produced in Orissa. According to the report of the Panel on Leather and Leather goods, the production of E. I. tanned hides is credited with tanning 48 lakh pieces for export and 30 lakh pieces for internal consumption, the total production being about 80 lakh pieces.

The tanning of hides and skins has been carried out by the /Chamar commu- nity by the use of indigenous vegetable tanning materials. There are many such known to this community and used by them in their tanning processes. The indigenous tan stuffs which are used in India on a wide scale are the barks of Babul and Avaram. Babul bark is the principal tanning material in North India from Punjab to Bengal since a long time, used alike by the rural tanning industry and the large organised tanneries as well. The shortage of Babul bark has led to the adoption of Wattle bark in recent years imported from South Africa by the organised sector of the in- dustry. The small scale cottage tanners, however, are still using Babul bark. In South India, the bark of Avaram is the principal tanning material and is used for tanning both hides and skins to produce tanned E.I. kids and goat and sheep skins for the export market. Avaram bark has properties which make it specially suitable for the production of these types of leathers. In the organised sector of the industry the shortage in the availability of the Avaram bark has led to its replace- ment by Wattle bark tanning. At present the use of Avaram bark is essentially confined to the tanning of skins alone. In addition a large number of other indigenous tanning materials are also used by the Chamar community; however, they are not so important on account of the inadequacy of their supply and the unsatisfactory leather they produce.

III. Problems of the Industry.

The indigenous leather industry has considerably suffered from the long standing social neglect of the communities which are occupied in this profession. The Chamars are socially depressed and unorganised and their technique is primitive. Research is needed in the improvement of cottage tanning as also in the utilisation of dead cattle. As the report of the Panel points out the tannage of goat skins and glazed kids require research work even today for the large tanneries. There is still greater need for such research work for the cottage tanners, in order to introduce better methods of tanning under cottage conditions.

Another conspicuous defect of the indigenous industry lies in bad flaying of hides and skins derived both from slaughtered and naturally dead animals.

Facilities for training flayers should be arranged in different States for the improvement of flaying of naturally dead animals. The Chamars should be organised into co-operative societies to facilitate proper flaying and marketing of hides and other products from the carcass. Apart from improvement in the technique of flaying, curing and tanning, the Chamar community should be helped to make better and fuller utilisation of the dead cattle by the recovery of bye-products like fat and bones, which would enable them to augment their meagre income. The introduction of a suitable equipment such as bone digester would raise the manurial resources of the country.

In order to assist the Chamar community in procuring the necessary raw materials as well as marketing tanned hides at remunerative prices, the need for organising them into co-operative societies becomes essential. In fact only through such co-operative organisations, any lasting reforms can be achieved. Certain State governments particularly the U. P., have done some spade work in this connection. A few schemes undertaken by the U. P. Government are in operation in a few centres under the supervision of its Leather Development Department.

Another problem which the village leather industry is faced with is the shortage of vegetable tanning material. Madras is one province where cottage tanning is particularly concentrated. The requirements of Avaram bark in Madras is large, but due to indiscriminate cutting of trees the bark is in short supply now. There is, however, considerable scope for the development of Avaram trees, in forest areas naturally favourable for their growth. The production of Avaram trees may be developed in some reserved forest areas of Madras, which can meet the needs of Madras to a considerable extent.

IV. Programme of Development.

The development of leather industry should be visualised as an integral part of a scheme for the full utilisation of dead cattle. Viewed in this perspective, the scheme should include not only the production of hides, and the manufacture of leather goods but also the utilisation of bye-products such as tallow, flesh, manure, bones etc.

The existing practice in the disposal of dead cattle is wasteful and unscientific. The recovery is generally limited to the removal of hide from the body.

The carcasses, after flaying are left to the vultures. Except for what is collected by some agents for bone mills, the rest of the bones are lost. If the total quantity of dead cattle is fully utilised, the recovery of meat and bone should amount to Rs. 4·4 crores and fat to Rs. 2·7 crores. The meat, bone and tallow which are at present wasted due to non-recovery can, therefore, be estimated to be worth about Rs. 7 crores.

The extensive nature of the scheme would not naturally permit any drastic improvement being achieved in a short period. A beginning can, however, be made by taking municipal towns as starting points. Every municipal town may be equipped with a recovery factory-cum-tannery where all the dead animals are brought and processed. The disposal of all carcasses through this factory may be made compulsory. The factory may be run either by the municipality or a co-operative society.

Each such municipal unit becomes a nucleus from which the improved method of recovery, is gradually extended over a wider area. The unit should be a training centre where Chamars are taken and trained for recovery work and tanning. It should further maintain and send out to villages demonstration parties which would take up the programme of setting up recovery cum-tanning factories on a co-operative basis. They would besides, train the Chamars and undertake propaganda on the value of recovery products for feeding poultry, manure etc.

The next aspect of the scheme relates to the establishment of cottage tanning industry on a sounder basis. Although the cottage tanners are distributed throughout the country, a large number of them have of late migrated to towns. The reason for this shifting seems to be the more easy availability of tanning raw materials and also the ready market for the disposal of their products in towns. The trade in hides is so well organised even in villages that almost the entire quantity finds its way to dealers and agents in towns so that local sales are very difficult to effect. It is on account of these reasons that the village tanners find it gradually unremunerative to carry on their profession in their village homes and either give up the profession or shift to the town. Apparently even the keen competition with large established tanneries in towns seems to be a less arduous problem to the cottage tanner than the many other difficulties that face him in the village. The problem can be solved only by the

creation of co-operative organisations of tanners in the villages. Reference has earlier been made of the work carried out by the U. P. government in creating such co-operative organisations within the State. The method is worthy of wide application throughout the country.

Programme for 1954-55

The programme of the Board for 1954-55 is to make a modest beginning with recovery work, tanning and leather craft in rural areas through methods of demonstration and training and end up in the establishment of co-operatives of Chamars with government aid. Each demonstration party will select a village circle of 30 to 33 villages and establish working centres at government expense on a co-operative basis. The demonstration party creates the nucleus and starts a co-operative organisation which will make arrangements for flaying, curing, preparation of flesh, manures, tallow etc., as well as undertake bone crushing, tanning and the manufacture of leather goods. The co-operative organisation would receive grant for the construction of sheds, loan for working capital and subsidy on equipment. From this nucleus, Chamars spread out to a circle of 30 to 33 villages, and procure the dismembered carcass to the utilisation unit. The labour is paid for the unit and the product also belongs to the unit. After putting the co-operative organisation on a sound footing, the demonstration party choses a second village for creating another nucleus of the utilisation unit. The same process is repeated after every three months. Thus one demonstration party would be able to cover nearly 100 villages per year.

The scheme also envisages the establishment of 100 centres in villages engaged only in flaying work, as it is considered that it may be simpler to start such centres than those combining tanning and leather craft along with flaying. Besides, the scheme provides for grant of subsidy for construction and repairs of tanning pits of village Chamars. The total expenditure is expected to be of the order of Rs. 9·5 lakhs

CHAPTER X

COTTAGE MATCH INDUSTRY

The match industry in India is of considerable importance not only because it produces an essential article of every-day use but also because it contributes to a large extent to the revenues of the State by way of excise duty. The industry is also ideally suited to be operated on a cottage scale and thus provide employment to persons who might otherwise be unemployed or under-employed. In recent years, India has been able to earn some foreign exchange through the export of matches to neighbouring countries.

Until 1921, the bulk of India's requirements of matches was imported from Sweden and Japan. In 1922 the Government imposed an import duty on matches of Re. 1/8/- per gross. This tended to discourage import of matches and match factories began to spring up in India in large numbers.

The factories that came up during this period were not all of the same type or size. Since match manufacture could be carried on as a cottage industry, a number of small units using the hand process grew up. Mechanised factories capable of meeting a large share of the internal demand for matches also developed at the same time. The latter was owned and operated by a Swedish combine.

The first of the Swedish match factories in this country was set up at Ambernath, near Bombay, where manufacture started in 1926. Subsequently four more factories under this Swedish concern were started in Bengal, U.P., Assam and Madras. Production in India rose rapidly and reached a figure of 13½ million gross boxes in 1927. Keen competition grew between the various manufacturers in India and the price of matches came down rapidly. In 1928 the Tariff Board enquired into the claim for protection of the match industry and recommended the continuance of the then existing import duty of Re. 1/8/- per gross. Government accepted this recommendation for grant of protection. The Tariff Board also reviewed the question of a sharp decline in revenue from reduced imports of matches and suggested that the loss in revenue may be compensated by the levy of an excise duty on indigenous production. No excise duty was,

however, levied on matches until 1934 when an excise duty equal to the import duty of Re. 1/8/- per gross of matches (60 sticks) was imposed. At the same time, the duty on imported matches was raised so as to correspond to a figure representing the import duty then in force plus the new excise duty. Government, however, made a distinction between larger and smaller manufacturing units and provided for a rebate of 10 pies per gross boxes of 40 sticks in the case of cottage factories as against a rebate of 2 annas per gross recommended by the Tariff Board and defined cottage factories as those which make up to 100 gross a day. This rebate was not considered adequate by match manufacturers and there was considerable agitation to enhance the rebate on handmade matches in view of the pitiable plight created by competition from the large mechanised units. In response to this agitation, a slight change in the rebate was made in 1949 although by this time the rate of excise duty had been doubled. The factories were then divided into three classess for the purpose of granting rebate on excise duty. In 1950, this has been furthur modified. The rate of excise duty as modified in March 1949 and April, 1950, is given below:

Excise duty—March, 1949

Class A.	For factories producing over 500,000 grosses annually ...	60's	Rs. 3-0-0
Class B.	For factories producing below 500,000 grosses annually but over 100 gross a day ...	60's	Rs. 2-15-3
Class C.	For factories producing 100 gross per day ...	60's	Rs. 2-14-0

Excise duty—April, 1950

Class A.	For factories producing over 500,000 grosses annually ...	60's	Rs. 3-0-0
Class B.	For factories producing below 500,000 grosses annually but over 100 grosses a day. ...	60's	Rs. 2-14-0
Class C.	For factories producing 100 grosses per day. ...	60's	Rs. 2-13-0

I. Brief Survey of the Industry

There are five large match factories owned and run by the Western India Match Co., Ltd. (WIMCO) and its associate, the Assam Match Co., Ltd. (AMCO). Their location and daily capacity are given below:

Location		*Daily Capacity* (Gross boxes of 60 sticks)
WIMCO, Ambernath, Bombay	...	20,250
WIMCO, Alam Bazaar, Calcutta	...	18,000
WIMCO, Bareilly, U. P.	...	15,000
WIMCO, Washermanpet, Madras	...	17,000
AMCO, Dhubri, Assam	...	7,000
Total	...	77,250

On the basis of 300 working days, the capacity of WIMCO and AMCO would amount to 22.8 million gross boxes per annum.

In addition to these five units, there are over 200 smaller units operating in the country. Most of them are middle class factories (B Class) and cottage type factories manufacturing up to 100 gross boxes per day (C Class) in which most of the operations are done by hand. These units are mostly concentrated in Sattur and Sivakasi in the Ramnad District and Kovil-patti in the Tinnevelly District of Madras. Their capacity is estimated at 30 and 40 million gross boxes per annum. The total capacity of the industry thus works out nearly 50 million gross boxes (60 sticks) per annum. It has, however, to be remembered that out of over 200 medium and cottage factories in existence, more than 40 factories were out of operation in 1952-53 due to severe competition and hardship so that the effective capacity of the medium and cottage industry today is much less than what is indicated above.

The trend of production in match industry gives scope for an interesting study on the development of cottage match industry in recent years. The overall production of matches including that of large scale as well as cottage units have steadily increased in recent years. From a figure of 28 million gross boxes in 1949-50, the production of matches increased to nearly 30 million gross boxes in 1950-51, 32 million gross boxes in 1951-52 and 35 million gross boxes in

1952-53. The total number of match units and their production in the last four years by different classes are indicated in the table below :

Number of match factories and their production.

	Class	No of factories	Production			
			40's	60's	Others	Total
1949-50	A	8	508,646	19,985,512	437,661	20,931,819
	B	116	4,727,955	1,582,969	271,826	6,582,750
	C	108	565,352	66,376	45,144	676,872
	Grand total	232	5,801,953	21,634,857	754,631	28,191,441
1950-51	A	6	408,926	20,170,861	69,692	20,649,479
	B	105	6,276,117	1,749,898	300,931	8,326,946
	C	127	795,125	55,986	20,119	871,230
	Grand total	238	7,480,168	21,976,745	390,742	29,847,655
1951-52	A	8	655,817	21,249,661	67,452	21,712,920
	B	104	6,825,694	2,539,020	182,980	9,547,702
	C	123	790,139	27,847	15,839	833,825
	Grand total	235	8,271,650	23,816,428	266,369	32,354,447
1952-53	A	7	509,901	22,376,823	95,113	22,981,837
	B	88	8,757,625	2,915,827	239,486	11,912,938
	C	94	883,225	33,681	20,041	936,947
	Grand total	189	10,150,751	25,326,331	354,640	35,831,722

Of the seven 'A' class factories in 1952-53, five belong to WIMCO and AMCO. The other two are the National Match Works, Shivakasi, Madras and Isavi Match Works, Calcutta. It would be noticed from the above table that

70 to 75 per cent of the total production of matches is accounted for by seven or eight 'A' class factories. It would be evident that the scope for cottage matches at present is limited to the remaining 25 to 30 per cent.

The number of 'B' and 'C' class factories have progressively decreased from 1949-50 to 1952-53. Thus whereas there were 116 'B' class factories in existence in 1949-50, it had decreased to 88 in 1952-53. Similarly whereas there were 127 'C' class factories in operation in 1950-51 there were only 94 such factories in production in 1952-53. The decline in the number of 'B' and 'C' class factories has proceeded at a fast pace and is indicative of the increasing pressure of competition these factories had to face in recent times. While the total number of both 'B' and 'C' class factories has continually decreased, the production of each of these classes has shown an upward trend. Thus against a production of nearly 60 lakhs grosses of matches in 1949-50 by the 'B' class factories, the production in 1952-53 was nearly 119 lakhs. Similarly against a production of 6.7 lakhs gross boxes in 1949-50 by the 'C' class factories, the production has gone up to 9.3 lakh gross boxes in 1952-53. This trend of increasing production by decreasing number of match factories is significant because it indicates a greater concentration of production in fewer units. This trend is deplorable and has to be arrested by adequate measures.

A further analysis of the production of matches would show that leaving out the 'A' class factories, the remaining production is more or less entirely in the hands of 'B' class producers at present. The share of 'C' class factories in the total production of matches is hardly 2 to 3 per cent. The need to increase the share of 'C' class factories in the total production of matches thus becomes evident. In the following table the figures of production of match for the year 1952-53 has been re-classified taking into account only the production of 40's and 60's and leaving out the other types of matches produced which is negligible.

Production of matches in 1952-53 (*in thousand gross boxes*)

Class	No. of factories	40's	60's	Total in term of 60's
A	7	509	22,376	22,716
B	88	8,757	2,915	8,754
C	94	884	33	623
	189	10,150	25,324	32,093

Out of the total production of 32 million gross boxes (in terms of 60's) in 1952-53, the share of seven A class factories alone comes to 22.7 millions. The production of factories belonging to WIMCO alone was 22 million gross boxes which accounts for 70 per cent of the total production of matches, leaving only 10 million gross boxes to be accounted for by the rest of the 184 factories in India. The annual capacity of WIMCO being 22.8 million gross boxes the present production would amount to 95 percent utilisation of their capacity.

There were 88 factories in 'B' class in 1952-53. The total output of these factories in terms of 60's was 8.7 million gross boxes. The average production of a 'B' class factory would therefore amount to 330 gross a day against the licensed capacity of 1,670 gross a day or 5 lakh grosses a year. On this basis, it may be said that the 'B' class factories are working, on an average, only up to 20 per cent of their licensed capacity.

Similarly, 94 factories in the 'C' class are turning out in terms of 60's 623,000 gross boxes a year, or the output per day per factory is nearly 22 gross. The 'C' class factories are, therefore, working at nearly 22 per cent of their licensed capacity of 100 gross a day.

Thus it is evident that whereas the 'B' and 'C' class factories are operating at present only at 20 to 22 per cent of their capacity, WIMCO's have been working at about 95 per cent of their capacity.

A regional analysis of 'B' and 'C' class factories indicates that 90% of the production by these classes of factories is accounted for from South India, where the bulk of production is done in 'B' class factories.

II. Technique of Match Manufacture

Match manufacture is quite simple and can be conducted without the help of any machinery. This is the one industry in which both handmade and machine-made articles of equal quality and price may be placed before the consumer. A remarkable feature of this industry is that whether the processes are carried out by hand, beginning with ready made splints and veneers or the manufacture is conducted with the help of the most up to date modern automatic machine, the quality of the products, the finish and appearance remain the same. It may hardly be possible to distinguish a handmade product from that made in the automatic

machine from its appearance or performance. At present both these types of matches are in the market, purchaseable at the same price by the consumer and giving the same performance. Beginning with splints and veneers which are machine-made, all operations in match manufacture may be conducted with hand without the use of any machine and given the skilled hand, hand operations would be less costly than machine operations. The labour charges in a hand-made factory are distinctly cheaper than labour charges in factories where the operations are carried on with the help of automatic machines. That the manufacture of matches by machine is costlier in India than that by hand is a fairly established fact. When we consider that matches of the same quality could be produced at competitive prices by the hand industry with the additional advantage of providing large scale employment, the need for developing hand-made match industry becomes clear.

III. Problems of Small Units

Although the necessity to foster the growth of cottage match industry is widely recognised, it is not likely to take effect unless some of the major problems facing the industry are properly tackled. These problems relate to (1) lack of finance (2) competition from large scale units, (3) lack of proper marketing arrangements, and (4) shortage of raw materials.

1. *Finance for the industry*

Small units, by their very nature, are not in a position to command large resources to run their factories in an efficient manner. If, for some reason or other, these units are not able to market their products regularly the capital lies blocked up and the unit has to close down until the stocks are cleared. The excise duty which comes to about 50% of the working capital also throws a great burden on the small units. A suggestion has been made later that the small units should be spared of this burden.

2. *Competition from large scale units*

While the small units have to compete with large units in almost every industry, it is specially serious in the case of match industry. Here, one particular combine with tremendously vast resources and a widespread marketing organisation at its command produces more than 70% of the total supply of

matches in India while the rest of the 30% production is shared by about 180 small factories. It will not be difficult for the big manufacturing concern practically to monopolise this industry unless some protection is granted to small units. Such a possibility was visualised even as early as in 1926 when the Tariff Board enquired the case for protection for match industry. By this time the Swedish Combine had already captured 50 per cent of the total match market in India. During the enquiry, the Swedish Match Factory gave an assurance to limit their production to fifty per cent of the total demand in the country. From the production figures of WIMCO, however, it is obvious that this assurance has not been honoured. The possibility of curtailing the production of the organised sector in the interest of developing decentralised cottage units is, therefore, a matter which needs particular examination in the match industry. It may be relevent to quote here the observations of the Tariff Board which, in 1928, made the following recommendation in regard to the futute expansion of WIMCO. "In the event of the company using its large financial resources to attempt to extend its present share of the Indian Market, by means of unfair competition, to the detriment of the Indian manufacturers, we would recommend that the Government should be prepared to take such steps as may be necessary to safeguard Indian Industry". A stage appears to have reached when an objective appraisal of the situation created by the capture of such a large share of match market by the WIMCO has become imperative. It may not be out of place to mention here that such a scrutiny was conducted recently in the United Kingdom by the Monopolies and Restrictive Practices Commission. The report of the Commission indicates that the existing system in which the British Match Corporation, the counterpart of WIMCO in the UK, has captured the major share of match market in the UK "operates and is likely to operate against the public interests as respects the supply both of matches and of match making machinery."

3. Lack of proper marketing arrangements

One of the greatest handicaps of the small units relate to the inadequate marketing arrangements that are available to them. On account of their small size and capital they are not able to market their products independantly and have invariably got to depend on midelemen who make large profits, at the expense of

the small producers. On the other hand, the large producer can afford to have a marketing organisation of his own which could directly trade with the Panwala. A proposal for a marketing organisation to serve the interests of the hand-made match manufacturers has been made later in the note.

4. Shortage of raw materials

The principal raw material of the match industry is match wood. The present position in regard to the supply of soft woods, particularly *semal* wood, is far from satisfactory as they are fast being depleted. The small units which cannot afford to pay exhorbitant prices for match wood are particularly badly hit on account of the shortage. As the Planning Commission has pointed out, "the industry is decidely short of this raw material and planned efforts are necessary to raise plantation of match wood spices."

IV. Measures of Assistance to Hand-made Matches

1. Non-expansion of large-scale units

The Planning Commission has drawn up a development programme for match industry in which they have recognised the need to restrain the expansion of the large scale industry any further. The following recommendation has been made by the Commission :

> "The medium and cottage scale manufacturers of matches have an important place in the national economy, since they help to provide employment to persons who might be otherwise underemployed or displaced from the land as a result of the rationalisation of agriculture. Hence for stepping up production to meet the increasing demand, cottage type of small-scale units should be established especially in view of the fact that the existing large-scale factories are already producing up to 90 per cent of their rated capacity and are not in a position to increase their production without heavy investment."

In view of this recommendation and in the interest of employment, Government may be expected to take immediate steps to see that large-scale factories, particularly mechanised ones, do not add to their capacity.

2. *Limiting the production of mechanised units*

But the above measure by itself does not provide much scope for any appreciable expansion of the small factories. Against the target of 35.3 million gross boxes (60 sticks) set by the Planning Commission to be achieved by 1955-56, the production of all varieties of match boxes was 35.8 million gross boxes in 1952-53 which works out to about 32.0 million gross boxes in terms of 60 sticks boxes. This gives only a limited scope of expansion for the hand-made matches. If hand-made match is to be developed, restriction on the production of the large mechanised factories, therefore, becomes inevitable. As it is, more than 70% of the total production is carried out through half a dozen organised units and the rest by factories employing manual labour. The undertaking given by the WIMCO to restrict their production to 50% of the total match demand has not been honoured. The development programme for matches has to be so organised that the proportion of production between large units and the hand operated ones is reduced to a more reasonable level. Government can bring about this transition by adopting certain restrictive measures. The supply of banderols to large units can be restricted to a pre-determined quota which is fixed by the Government bearing the above principle in mind. Certain other measures such as restricted supply of controlled raw materials, revision of excise duty to make production beyond a certain limit uneconomic etc., could also be adopted by the Government to limit the production of large factories.

3. *Higher rebate of excise duty*

The present rate of excise duty needs to be revised, in any case, to give a degree of protection to the small manufacturer. The rebate granted at present is found to be inadequate and does not give the desired relief to small manufacturers. In the first place, the small factories have to give greater commission to selling agents. For want of marketing organisation and capital, the small producer has to market his product through a chain of middlemen including the wholesaler, the retailer and the panwala whereas the large producers are able to supply directly to the panwala through depots maintained by them. Secondly on account of the multiple point sales tax system prevalent in the Madras State which predominates in the small factories, the small producer has to pay sales-tax at each of these stages and, therefore, in the aggregate, a higher sales-tax than the large producer. Thirdly some

of the factories, particularly of the 'C' class had to close down as they had to work practically at a loss or at any rate without any margin of profit.

4. Deferred payment of excise duty

The one great handicap which hampers the growth of small match factories is lack of capital. One way of solving the problem of finances, at any rate partially, is the acceptance of a system of deferred payment of excise duty. The excise duty being roughly about 50 per cent of the sale price of matches, this arrangement will reduce by 50 per cent the capital required in this industry. The system of deferred payment of excise duty has been accepted, although in a different context, in the case of tea and tobacco industries. The concession should be given to all factories employing the hand processes of manufacture. Care will have to be taken while fixing details of this procedure to see that small factories which are unable to provide much surety are able to get advantage of this arrangement. The proposed Marketing Organisation could be made responsible for the payment of excise duty. Those factories using the hand process which want to take advantage of the deferred payment of excise duty can sell their products to the Marketing Organisation without payment of excise duty. They will obtain the banderols on credit and to the extent their match stocks are sold to the Marketing Organisation, no excise duty need be paid by them. The Marketing Organisation will be required to pay the excise duty before the goods are removed from their godowns to the retail shops.

5. Marketing Organisation

While the large-scale producers have their own depots and do not have to depend on middlemen for marketing their products, the cottage producer suffers from a number of handicaps in this respect. For want of marketing organisation and capital, he has to pay a higher rate of commission to a chain of middlemen and is thus at a great disadvantage as compared to large-scale producers like WIMCO; for want of same facilities, the cottage producer has to pay a much higher sales ax at various points as compared to the large scale producers. This is because of the multi-point scale tax system obtaining in certain States. As the large-scale producers command their own sales depots which supply direct to the "Panwalas", they have to pay sales tax at only one point, namely, that of the manufacturer. The cottage producres, on the other hand, have to pay sales tax at four points, first at the manufacturing stage,

second, at the commission agent's stage, third at the whole-salers stage and the fourth at the retailer's stage. Putting the extra commission and the extra sales-tax together, the cottage producer has to bear about 13 annas more expenses per gross than the large-scale producer. To this has to be added the extra freight charges that the cottage match manufacturers have to pay on account of larger distances they have to cover than the large scale producers. A marketing organisation backed with necessary finances seems, therefore ,quite indispensable for pushing sales of cottage matches. This is borne out by the experience of some marketing centres. Wherever match factories of Sattur or Sivakasi have been able to open their own depots, they have succeeded in capturing markets in competition with large mechanised factories. The solution for the problem of marketing, therefore, lies in the creation of a marketing organisation with a net work of depots in important consuming centres.

V. Classification of match factories

The existing classification of 'B' and 'C' class factories as cottage units does not conform to the accepted criteria of a cottage industry. Both from the point of view of the number of workers employed as well as the quantum of production, they would more appropriately fall under the category of organised industrial concerns. On the basis of the existing annual consumption of 32 million gross boxes by 360 million people, one gross box is consumed daily by about 4,000 persons. On an average of 400 persons per village, one gross per day is adequate to meet the requirements of 10 villages. A 'C' class factory with a capacity of 100 gross a day can, therefore, cater for about thousand villages. A unit of 100 gross a day is, hence, too big to be considered as a cottage unit. The same would apply more forcefully in the case of the present 'B' Class factories which is licensed to produce up to about 1600 gross a day. The test of the number of workers employed also fails to classify these factories as cottage units. Generally speaking, one person can produce one gross of match per day by hand. On that basis, a hundred gross factory will require about hundred persons a day. All of them, of course, may not be engaged within the permises of the factory. In match manufacture, part of the operations are conducted in the factory proper, while frame filling and box making are allowed to be carried on by workers in their homes. According to an estimate, for every one person employed within the factory premises, there are two persons employed in their homes for frame filling and box making. Thus a 'B' class factory

operating to full limit may have about 400 persons engaged in the factory and 800 to 1000 workers engaged outside the factory. A 'C' class factory may similarly have about 30 workers within the factory and 60 to 65 workers outside the factory. Where 30 to 400 workers are engaged in an industry under the same roof and under the supervision of an industrialist, the place can hardly be designated as a cottage factory.

In order to be a real cottage unit, the factory may be a proprietory one in which the family members with the aid of a few hired labourers may conduct the manufacture, or it may be a co-operative enterprise in which practically all the members will be also owners of the joint stock business. In both the cases the production should naturally be limited. Twenty-five gross per day had been suggested as the production limit of such a factory. But even 25 gross a day is too big a figure when it is considered that the production of such a factory is so large as to meet the needs of as many as 250 villages. A five gross or 10 gross factory catering to 50 or 100 villages may be a good size. Such small units are not likely to be more costly than the 'B' class units as the operations are carried on by hand and there is little or no supervision and consequent managerial expenses.

VI. Future Development

When match factories are registered as 'B' and 'C' class factories, under the present arrangements the market cannot be a local one. If market outside a local area has to be found, a good deal of the meaning generally associated with cottage production is lost. With the introduction of co-operative cottage match factories of 5 or 10 gross a day, this unhealthy feature of catering to long distance markets would disappear and local needs would be met by local production. Widespread establishment of these new small co-operative factories should be a feature conducive to the healthy growth of the cottage match industry.

In this endeavour, the use of bamboo sticks in place of wood splints would be of considerable help. The bamboo sticks have better burning and striking qualities. It has been found that very thin sticks of bamboo, about 20 to the inch, would serve the purpose. The use of these thin sticks will economise tip composition as well. For making bamboo sticks, no machine is required as is necessary for the manufacture of splints from wood. There is a steady and growing complaint about shortage of wood in India. With the introduction of bamboo as a material for match manufacture, there would be no draw on wood for making

matches. One piece of bamboo will go to make 10 to 15 gross of sticks. The utilisation of bamboo for the manufacture of matches will not affect to a noticeable extent the supply of bamboo as a material for household purposes.

The use of bamboo for match boxes will reduce the size of match boxes to $\frac{1}{3}$ or $\frac{1}{4}$ of the present size. Straw board can be used for the manufacture of match boxes at cheaper prices and such straw board can be made in villages. The replacement of wood by bamboo as a material for sticks and by straw as a material for boxes would make the match industry entirely free from the use of any machine. It would employ many more men and at the same time will not make the matches more costlier to the consumer. The future development of cottage match industry should preferably be fostered along these lines.

Progrmme for 1954-55

The programme of the Board envisages assistance to cottage factories along the following lines :

(1) Arrangements for marketing.
(2) Provision of laboratories to improve the chemical composition.
(3) The establishment of demonstration factories.
(4) Grant of subsidy and special grants and loans.

With regard to the extension of marketing facilities for cottage factories, the Board has proposed the opening of depots in cities. These depots will stock the goods and distribute them to various agencies such as Government emporiums, Khadi Bhandars, Gram Udyoga Bhandars, co-operative stores, etc. To start with, it is proposed to open 3 depots, one at Bombay and two at other suitable places. The expenditure for running these depots will be given as subsidy by the Board.

It is proposed to start two demonstration factories of small size producing 25 gross match boxes per day at two different places. Each of them will be given a grant of Rs. 7,000. A third factory will be run at Sodepur to conduct experimental work in connection with bamboo sticks, straw board, booklet match manufacture, standardised composition for splints and friction surface. The programme also proposes to subsidise 'C' class factories to the extent of Rs. 80,000 during the year. Further a special subsidy would be given to the proposed new 25 gross factories. The programme also visualises financial assistance to reopen many of those 'C' class factories which are at present closed down.

CHAPTER XI

SOAP-MAKING WITH NON-EDIBLE OILS

Apart from the conventional types of oilseeds which are cultivated and consumed, there are a number of other oilseeds available from trees in various parts of the country which are either allowed to go waste or utilised only in limited quantities. These oilseeds are found scattered and no systematic attempt for their collection and utilisation has so far been made. The difficulties attendant in the collection of these seeds scattered over wide tracts have generally been responsible for this neglect. The market for these oils is also limited at present. Most of them are of local importance but some are found in fairly abundant quantities over a wide section of the country. The collection and utilisation of of these seeds should add considerably to the oil resources of the country, apart from developing a new type of cottage industry which may provide employment to a large number of people.

The more prominent varieties of oil bearing seeds which are found in the forests of India are Neem, Maroti, Karanjia and Dhupa. All of them yield oils of industrial and medicinal value. According to the report of the Panel on Oil and Soap Industries, the production of Karanjia and Neem oils is about 3,000 tons and the total production of all miscellaneous oils of this class is about 10,000 tons. Considerable quantity of edible oils is at present used for industrial purposes like soap making, paint manufacture, lubrication etc. In 1952-53, for example, about 70,000 tons of oil were utilised for soap making, 30,000 tons for the manufacture of paints and 25,000 tons as lubricants. The total production of oils is admittedly far short for meeting the nutritive requirements of the people and if edible oils which are now diverted for industrial purposes could be replaced by non-edible oils, it would, to a considerable extent, increase the supply of oils for edible purposes. In this context, the utilisation of non-edible oilseeds, which are at present wasted, assumes importance.

As the trees producing these oil-bearing seeds are widely scattered in forests and in uncultivated waste lands, the exploitation of these resources would essentially depend on an efficient system of organisation for the collection of these materials. The production of oil would have to be organised on a decentralised

pattern based on the exploitation of the resources at the localities where they are available. The development of proper markets is another aspect in the development of these industries which needs consideration. Adequate propaganda on the uses and methods of utilisation of these oils has, therefore, to be undertaken.

I. The Present position.

(*1*) *Neem.*

The neem trees are found scattered throughout India, specially on the road sides of the north part of the country. They abound in Madras, Maharashtra, Khandesh, Berar, U.P., Punjab, Madhya Bharat, Rajasthan and Delhi. The neem oil is known also as Margosa oil. There is no organised collection of seeds and no authentic data on the production of oil which is only sporadically carried out. This oil is not yet a trade commodity and huge amounts of neem seeds are allowed to go waste. According to a recent survey conducted in Madras nearly 72,700 tons of neem seeds could be collected in that State, but actually only about 20,000 tons are collected and crushed, yielding 1,600 tons of neem oil. The full utilisation of neem seeds available in Madras is adequate to produce 5,000 tons of oil per annum. The position in other States is also similar. In Orissa, for example, only about 10 per cent of the seeds is crushed whereas in Madhya Pradesh, the percentage of seeds utilised is about 11.

The neem oil is, at present, utilised for illuminating and partly for medicinal purposes. When produced in bulk, it is exported to cities like Calcutta and Bombay for the manufacture of soap. The major draw back in the large scale utilisation of neem oil are its obnoxious smell and dark colour. Neem oil cake is a valuable manure.

(*2*) *Karanjia.*

The karanjia seed is obtained from the karanjia tree which grows naturally in forests and on road sides. They grow widely in the forests of Orissa, Mysore, Hyderabad, U.P., and Madras. A large number of them are found in Southern India and about 36 lakhs are estimated to be present in Madras State alone. The average yield of kernals per tree is 50 pounds which contains about 35 per cent of yellowish brown oil. According to the Indian Central Oilseeds Committee, the total seeds collected in the Madras State is 5,170 tons per annum. A large quantity of these seeds are allowed to go waste.

Karanjia seeds are crushed both by village ghanis and expellers. A large quantity of oil is produced in the Madras State (North Arcot district, Anaga Palli and Vizianagaram). Karanjia seeds from Mysore State and its adjacent areas are of good quality and rich in oil. The low price of seeds has retarded the proper collection of these seeds on a large scale.

The karanjia oil is used at present for tanning of leather and moulding purposes and to a small extent for lubrication. This oil forms an integral part of vegetable tanning and on the basis of ½ a pound of karanjia oil for every piece of leather, the leather industry consumes on an average 1,525 tons of karanjia oil. This takes into account only the quantity of oil required for the treating of exportable qualities of semi-tanned leather. The quantity of oil consumed for the processing of leather locally consumed cannot be correctly estimated. The requirements of this oil for the tanning industry is entirely met by mills situated in Madras and Mysore States.

II. Soap making from non-edible oils:

One of the main uses to which non-edible oils could be put to is in the manufacture of soap. Non-edible oils, however, suffer from the disadvantages of having deep colour and in some cases bad odour. The existing cottage factories producing soap do not possess the necessary equipment for oil refining and, therefore, generally use edible oils like groundnut and cocoanut which yield good soap even by the semi-boiled process. If, therefore, non-edible oils are to be utilised in soap making on any extensive scale in cottage units, they have to be refined, that is bleached and deodourised. Alternatively a new method has to be devised so that even small soap factories can make use of non-edible oils with the help of their meagre equipment. Certain experiments have been carried out in this direction and washing soaps of satisfactory qualities are already being made at present at Ekahtpur (District Sholapur) from oils containing neem oils up to the extent of 45 per cent. The new method which is a combination of full boiled and semi-boiled process is capable of producing both toilet and washing soaps of fairly good quality incorporating as much as 70 per cent neem oil with simple equipment. In this combination method, neem oil which has been preliminarily refined by boiling with salt and water is converted into full boiled grained soap by boiling with caustic soda and graining with salt. According to the quality of oil, two to three graining either with salt or caustic lye are given and the resulting soap mass is mixed with a hot mixture of coconut oil (25%) and rosin (2 to 5 per cent as per requirement) along with the requisite amount of caustic lye to saponify the coco-

nut oil and rosin. The soap is ready within half an hour when colour and perfume are added. If silicate is desired to be added, it is done in the beginning in the form of a 35° solution.

Boiled settled soaps cannot normally be made on a very small scale and, therefore, a combination of grained process and semi-boiled process has been evolved, whereby soaps of fairly good quality can be made even on a small scale with simple equipment. If at least one hydrogenated unit in each state could be reserved for refining non-edible oils, the utilisation of these oils in the production of standard washing and toilet soaps should be an easy proposition.

III. Programme for 1954-55

The programme for 1953-54 provided for the production and utilisation of only neem oil for soap making. The programme for 1954-55 proposes to extend the scope to other non-edible oils also. The scheme is divided into two parts, namely (i) model centres run by the Board directly and (ii) centres run by other institutions with the assistance of the Board. As this is an industry which has to be organised more or less newly, the programme has included a few model centres to be operated directly under the control of the Board. These centres, it is expected, would lay down certain standards of efficiency and demonstrate the economics of this industry. In 1954-55, two such model centres are proposed to be run by the Board. Provision has also been made for assistance to 30 institutions for starting soap making centres utilising neem and other non-edible oils. Assistance to these institutions is proposed to be given partly in the form of grants and partly in the form of loans. Further, provision has also been made for a subsidy of one anna per seer of neem oil produced by these centres. This provision has been made as an incentive for the proper collection of neem and other non-edible seeds on a more extensive scale. This subsidy, it is anticipated, will not be required after a period of two years. The additional employment created by the implementation of this programme is expected to be 2,000 in terms of full time employment, though in actual practice the work of seed collection will be spread over a very large number of persons for two months in the season.

TRENDS OF EMPLOYMENT SINCE 1901

Public attention has recently been focussed on the problem of unemployment in the country. While it is generally believed that the problem has assumed serious proportions only recently, an analysis of the various aspects of the problem has become difficult due to lack of precise data. The figures of registrations at the Employment Exchanges give useful information but they represent largely the extent of urban or educated unemployment. Sample enquiries have recently been started in various parts of the country to survey the manifold facets of the problem of unemployment as well as under-employment. But these enquiries relate only to the present situations and would not throw much light on the past.

2. A history of the development of the employment position in the various industries and services can, however, be built up by a careful study of the data of the population censuses. A question regarding the profession, or means of livelihood of every person is a prominent feature of every census. The information obtained by this question is compiled in elaborate tables giving the number of persons occupied in the various professions. The professions are themselves scientifically classified into divisions, groups etc. The economic status of every individual is also ascertained at the census i. e., whether a person is self-supporting, earning dependant or non-earning dependant. At the 1951 census a further aspect of the economic status was also ascertained, namely, whether a person was employer, employee or independent worker. Unfortunately there have been variations from census to census in the scheme of occupational classification and the method of ascertaining the information. The quality of the data also is not uniform: it has improved from census to census. The census tables, therefore, are not quite comparable. But an attempt has been made to obtain the figures of workers—the self-supporting persons plus earning dependants—in certain selected occupations for all the censuses since 1901 and they have been presented in the form of tables. The tables are for all-India and a few major states. They give both the absolute number of workers as well as proportion to the total population.

Inspite of their limitations, these figures are quite reliable for trends of employment in the particular occupations to which they relate.

3. Before examining these trends for individual occupations, let us review the over-all trends. The variations in the proportion of workers and non-earning dependants to the total population since 1901 are given below :—

Year	Workers	Non-working dependents
1901	103,593,798 (50.1)	103,261,453 (49.9)
1911	125,546,689 (49.6)	127,792,722 (50.4)
1921	122,668,900 (48.6)	129,492,270 (51.4)
1931	129,699,063 (47.0)	146,541,147 (53.0)
1951	142,337,038 (39.9)	214,291,274 (60.1)

The fall in the proportion of workers has been continuous but is most marked since 1931. The proportion of non-earning dependents has been consequently increasing.

4. The following table shows the variations in the proportion of workers in the agricultural sector :

Year	Persons	Males	Females
1901	64,450,763 (31.2)	...	...
1911	87,197,194 (34.5)	57,461,728 (22.7)	29,735,466 (11 8)
1921	83,885,145 (33.2)	54,542,856 (21.6)	29,342,289 (11.6)
1931	80,729,081 (29.2)	55,517,482 (20.1)	25,211,599 (9.1)
1951	102,118,261 (28.6)	68,993,989 (19.3)	33,124,272 (9.3)

It will appear that the proportion of workers in this sector rose between 1901 and 1911 but has been going down ever since.

5. The following table shows the variations in the proportion of workers in the non-agricultural sector.

Year	Persons	Males	Females
1901	39,143,035 (18.9)	—	—
1911	38,349,495 (15.1)	25,318,455 (10.0)	13,031,040 (5.1)
1921	38,783,755 (15.4)	26,712,073 (10.6)	12,071,682 (4.8)
1931	48,969,982 (17.8)	29,582,595 (10.7)	19,387,387 (7.1)
1951	40,218,777 (11.3)	31,599,572 (8.9)	8,619,205 (2.4)

It will appear that the proportion of workers in this sector has been consistently falling with the exception of a rise in 1931, due obviously to the movement of people from agriculture as a result of the economic depression. The fall between 1931 and 1951 has been very marked. Another remarkable feature in this sector is the much more pronounced fall in the proportion of female workers than male workers between 1931 and 1951.

6. Some of the reasons for the above trends have been examined in the Report of the 1951 Census and are summarised below :—

(i) During the twenty years following 1931, population grew faster than cultivation. The area of cultivated land *per capita* is known to have declined significantly in Uttar Pradesh, Bihar, Orissa, Assam, Madras, Mysore, Travancore-Cochin, Bombay, Madhya Pradesh and Punjab. If correct figures of cultivated area were available for other States, a similar decline would have been observed there.

(ii) Notwithstanding the decline in the area of cultivated land *per capita*, the relative weight of dependence on agriculture for gainful employment has not declined in the country as a whole. An increase is clearly observable in Uttar Pradesh, Bihar, Orissa, Assam, Madras, Hyderabad, Rajasthan and Punjab. Dependence and agriculture has not changed in Madhya Pradesh. It has probably diminished in Bombay, West Bengal and Mysore.

(iii) The main reaction to the general decline in the area of cultivated land *per capita*, unaccompanied by a more than proportionate increase in non-agricultural employment has been a general increase of non-earning dependency. The increase in absolute numbers of non-earning dependents since 1931 has exceeded the entire increase of rural population in India.

The increases are not accompanied by any material change in sex-ratio or age structure. *They must, therefore, be regarded as a rough index of the growth of unemployment in the country.*

(iv) There has been a general increase throughout the country in the number of cultivators and cultivating labourers (including unpaid family helpers) working on the same area of cultivated land. This provides a rough indication that under-employment is growing on the land.

7. The decline of employmet in the non-agricultural occupation, as the following analysis of a few selected occupations would show, is mainly the result of the development of organised industries, which have displaced more persons than they have employed. The organised industrial sector has developed to the detriment of the cottage and small scale industries. Since women used to take a prominent part in cottage and small scale industries connected with food, textiles etc., which have been adversely hit by the establishment of large scale factories, the proportion of female workers has fallen more steeply than that of males. This is likely to affect the status of women in the household. It is to be noted that the tendency is for the household to become monolithic i. e., dependent on one bread-winner for sustenance.

8. We will now analyse for individual occupations the data presented in the accompanying India tables and see how far the trends noted above are observable in each occupation. Tables for a few States have also been presented but the figures of individual occupations of these States are not being examined here as the trends in all the States generally are similar to those of India, with minor exceptions.

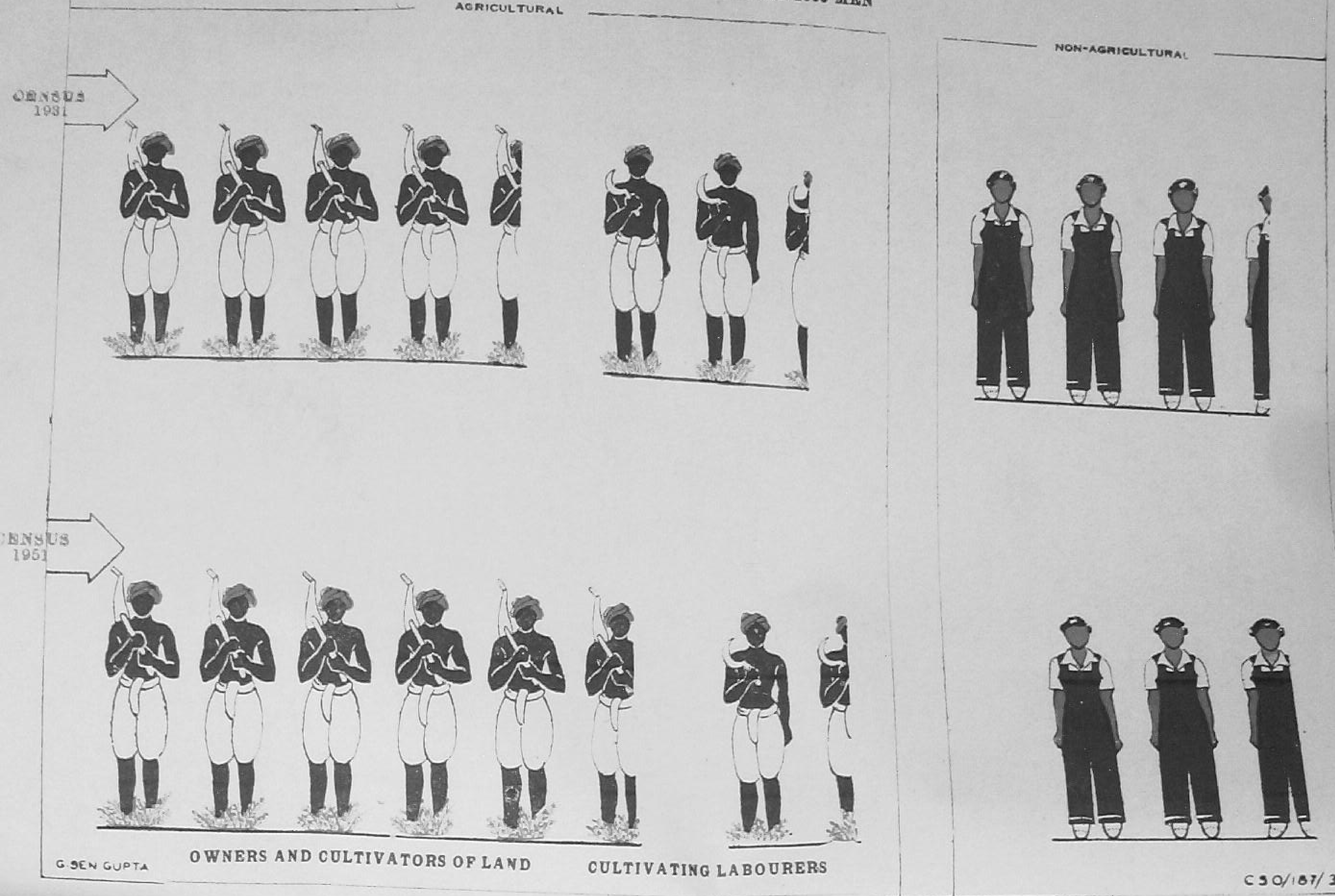
TEXTILES :

I. Cotton Textiles :

There has been a continuous fall in the proportion of workers to the total population in cotton textile industries since 1911. The fall has been so marked

CHANGE IN OCCUPATIONAL PATTERN IN INDIA

(PER 10,000 POPULATION)
ONE FIGURE REPRESENTS 1000 MEN



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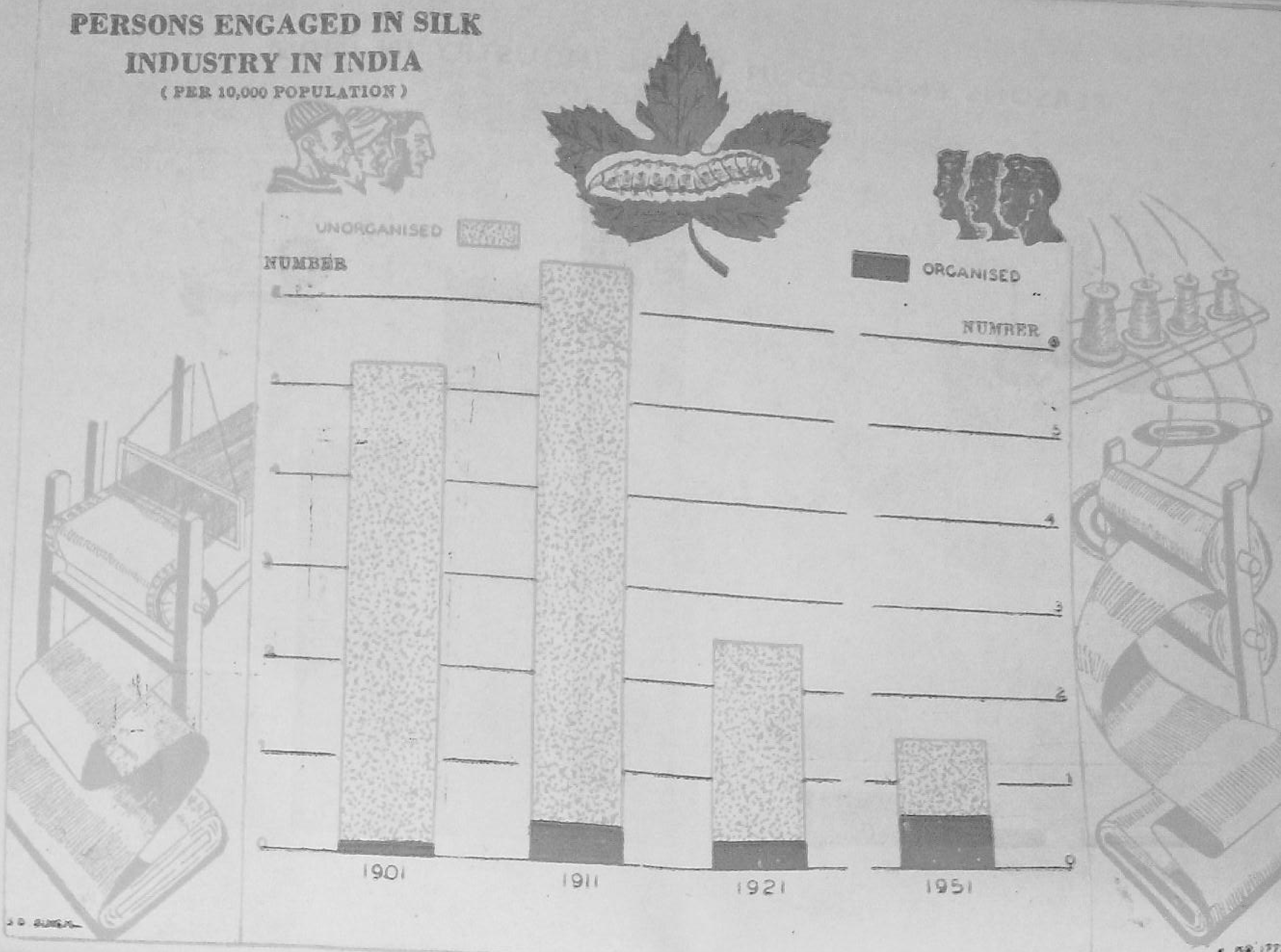
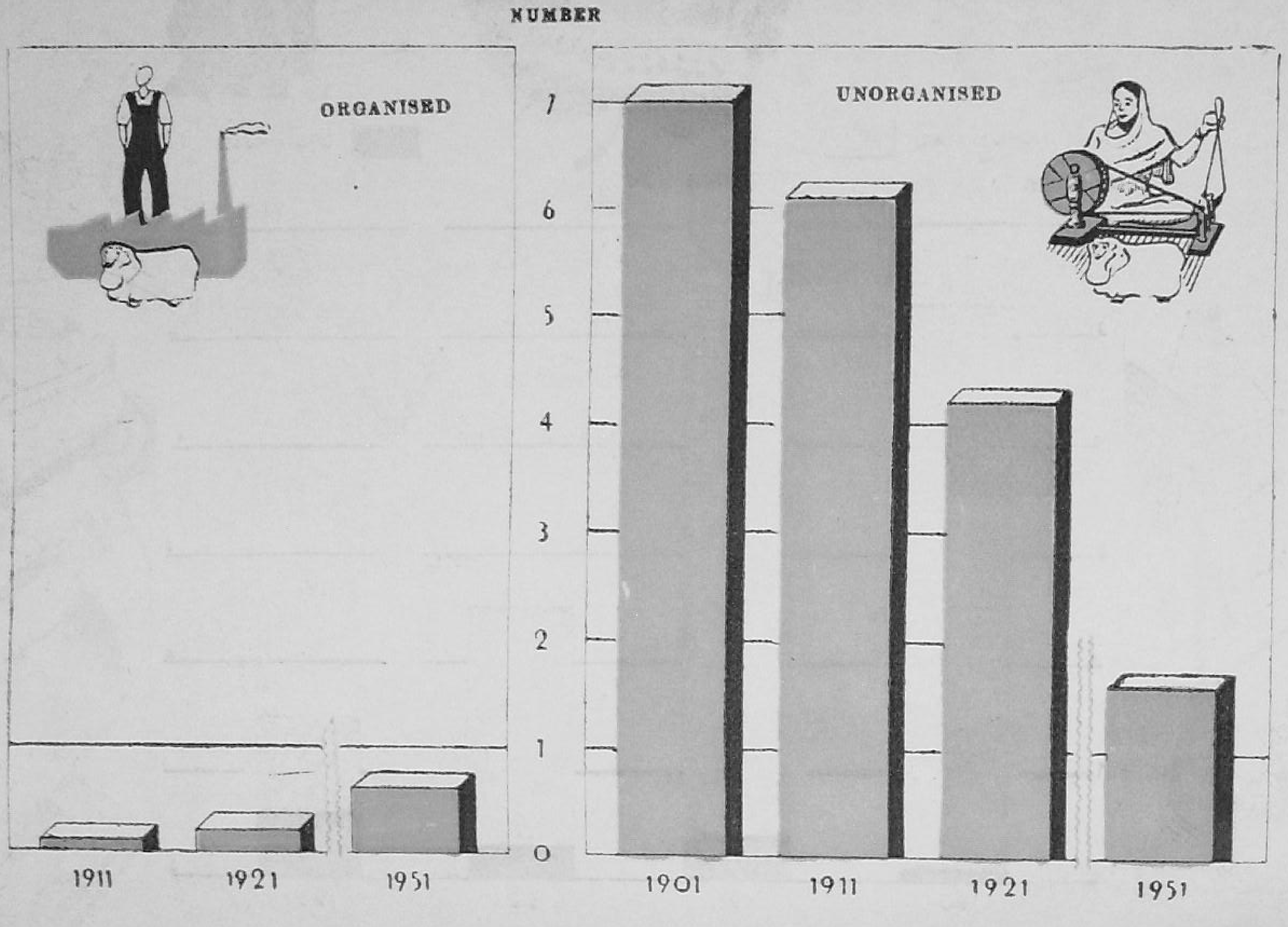


PERSONS ENGAGED IN SILK INDUSTRY IN INDIA
(PER 10,000 POPULATION)
UNORGANISED
ORGANISED
NUMBER
NUMBER
0
1
2
3
4
5
6
1901
1911
1921
1951

PERSONS ENGAGED IN WOOL INDUSTRY IN INDIA

(PER 10,000 POPULATION)



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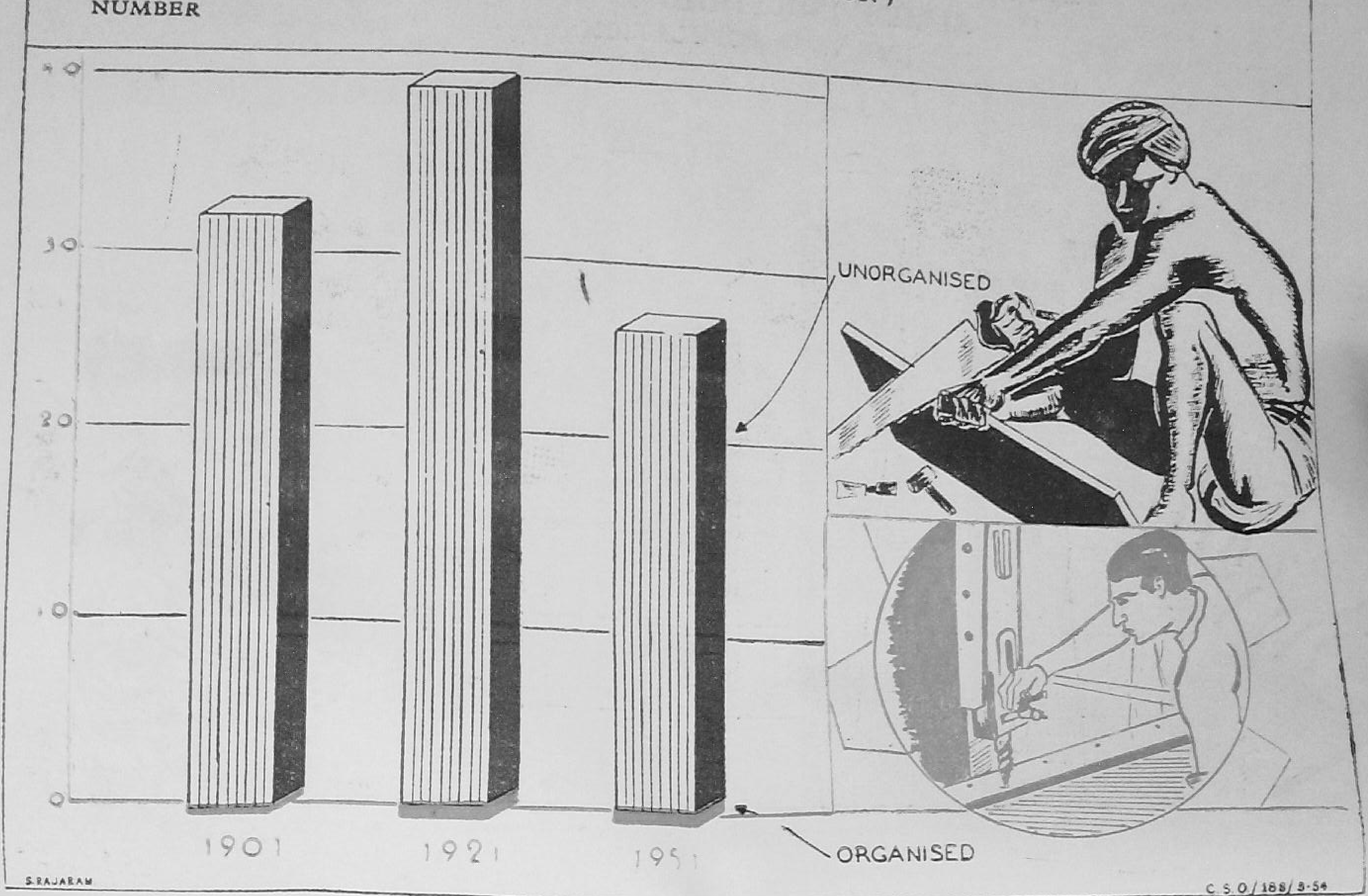
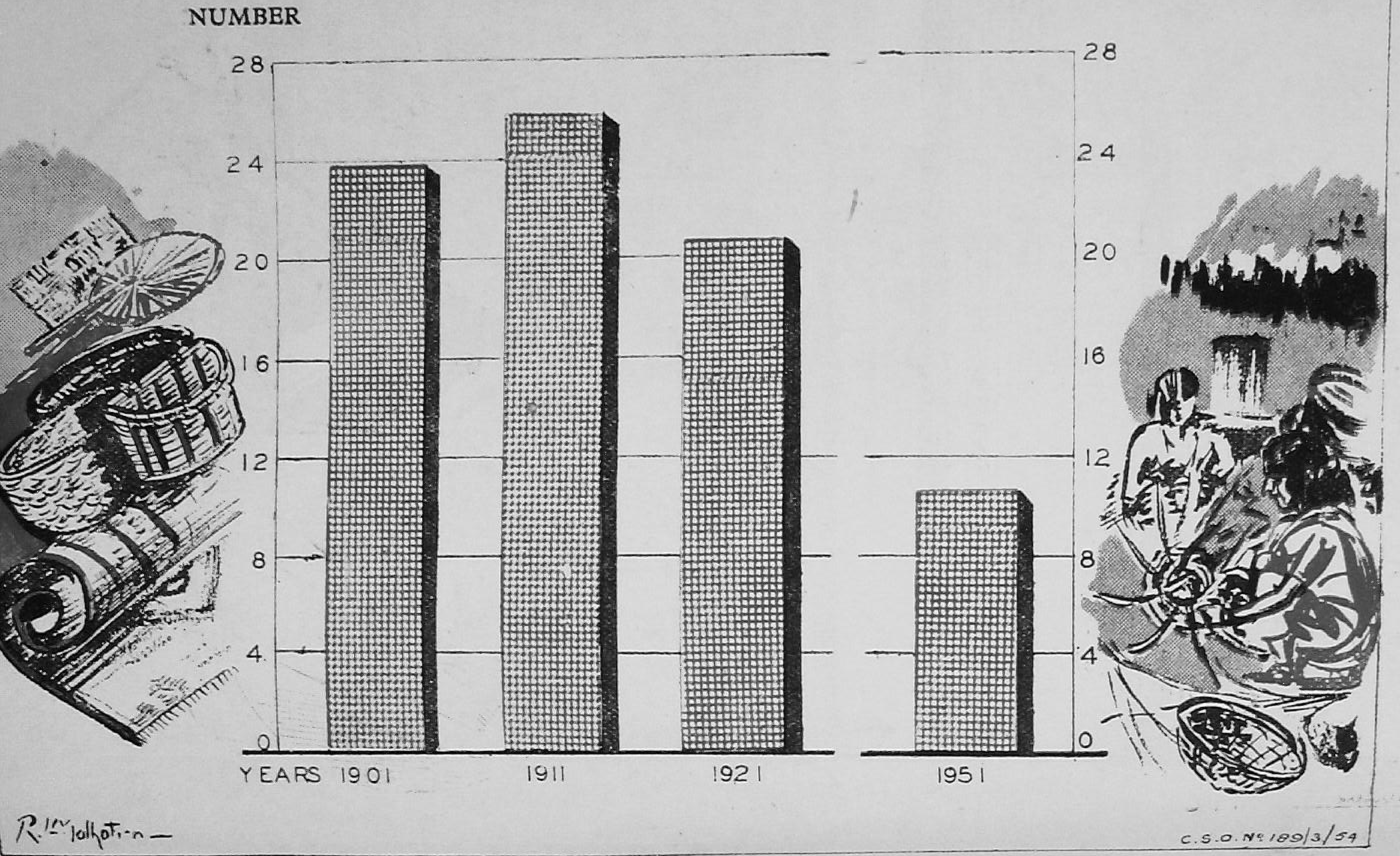
PERSONS ENGAGED IN WOOD CUTTING AND CARPENTRY IN INDIA

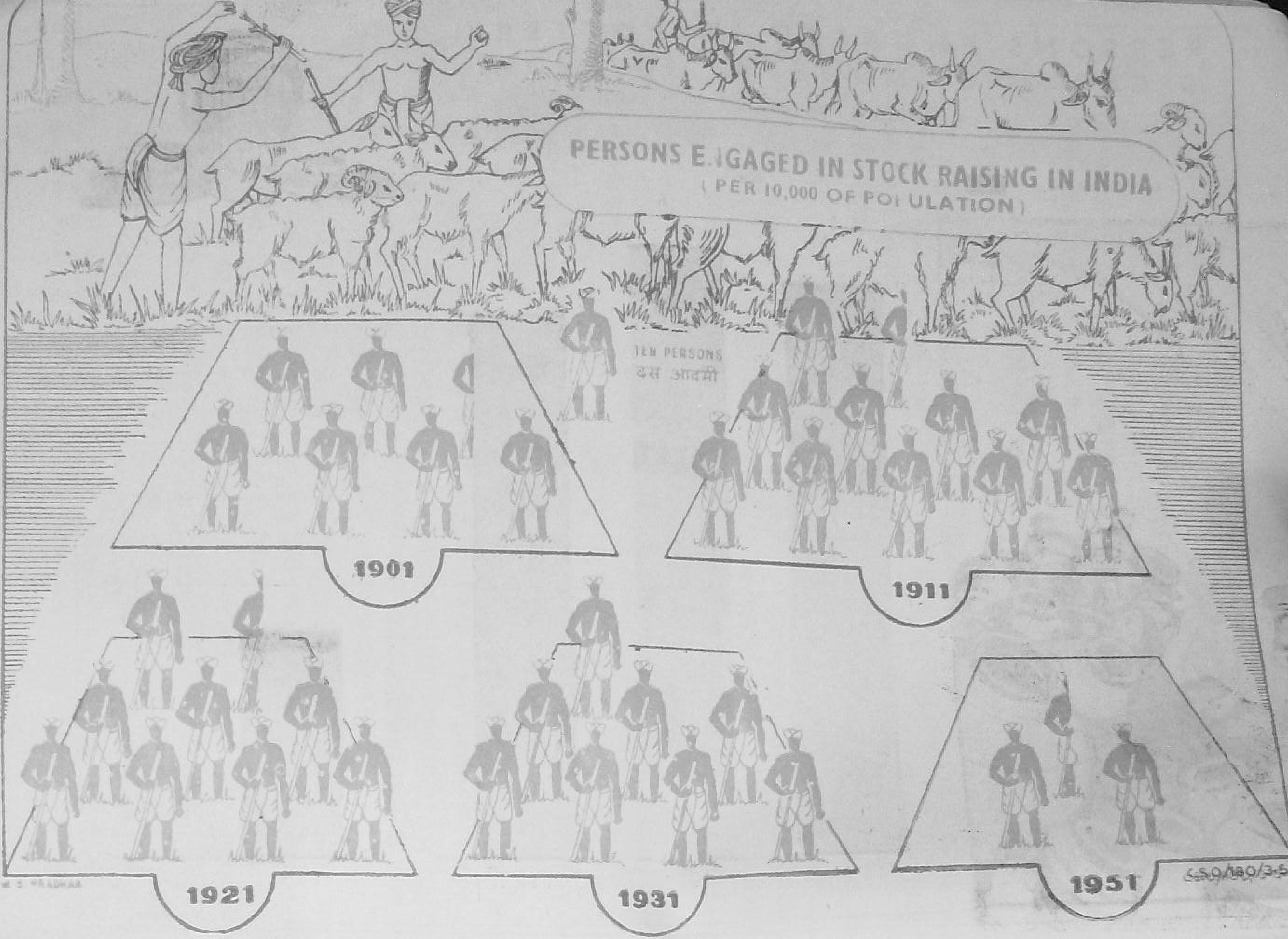
(PER 10,000 POPULATION)



PERSONS ENGAGED IN BASKET MAKING AND ALLIED INDUSTRIES IN INDIA

(PER 10,000 POPULATION)

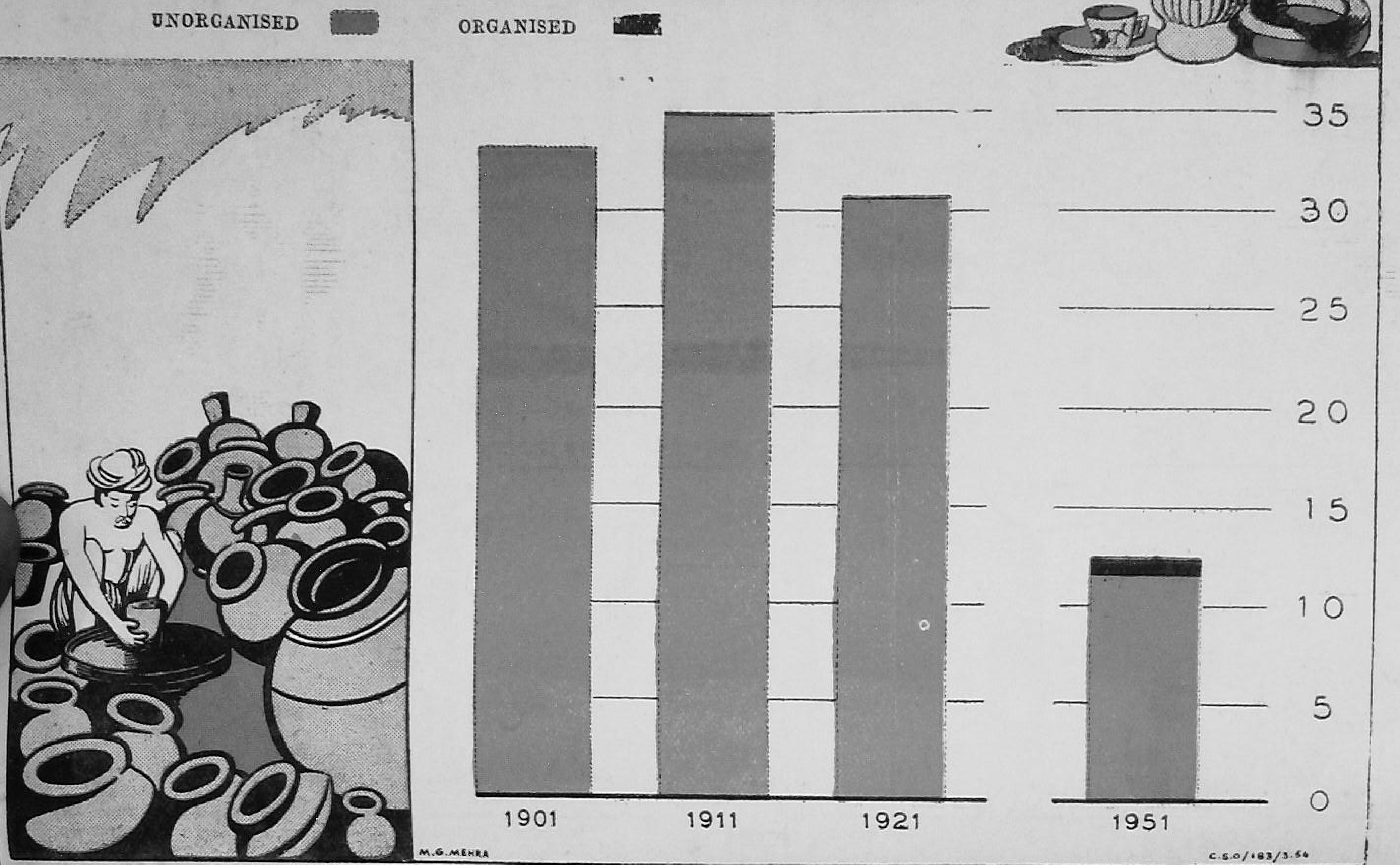




PERSONS ENGAGED IN STOCK RAISING IN INDIA
(PER 10,000 OF POPULATION)
TEN PERSONS
दस आदमी
1901
1911
1921
1931
1951

PERSONS ENGAGED IN POTTERY & CERAMIC INDUSTRY IN INDIA

(Per 10,000 Population)



that even the absolute figures have gone down from over **33** lakhs in **1911** to only 27 lakhs in 1951. As will be seen below the decline is mainly due to the establishment of mills for cotton ginning, cleaning and pressing and for cotton spinning, sizing and weaving.

(1) *Cotton ginning, cleaning and pressing* : With the increase of mills the number of persons employed in the organised sector has gone up from about 40,000 in 1901 to a little over one lakh in 1951. Simultaneously, the number of workers in the unorganised sector has been continuously going down and is now only 51,000 as compared with 96,000 in 1901.

(2) *Cotton spinning, sizing and weaving* : With the increase of mills the number of persons employed in the organised sector has gone up from 1.8 lakhs in 1901 to 7.8 lakhs in 1951. The number of workers in the unorganised sector has been continuously going down since 1911, and now stands at 16.7 lakhs as against 28.4 lakhs in 1911.

(3) *Cotton dyeing, bleaching and printing* : While the proportion of workers in these industries has been continuously decreasing since 1901, the absolute figures are slowly rising since 1921. Apparently the organised sector has not affected the unorganised sector as severely in this branch of textile industry as in others.

II. Silk Industry :

The number of workers in silk textiles has fallen from 1.61 lakhs in 1911 to only 54,000 in 1951. The number of workers in the silk mills has during the same period gone up from 10,000 to 22,000 but those in the unorganised industry have gone down from 1.5 lakhs to 32,000 only.

III. Wool Industry :

The number of workers has been going down ever since 1901. It stands at 79,000 in 1951 as compared with 165,000 in 1901. In the organised sector the number of workers has been continuously going up since 1911 and now stands at 22,000. In the unorganised sector the number has gone down from 153,000 in 1911 to 57,000 in 1951.

IV. Manufacture of rope, twine, string and other related goods from cocoanuts. aloes, straw, linseed and moonj products.

The proportion of workers in this group of industries is about the same now as in 1901, though the absolute figures have gone up from 2.13 lakhs to 3.25 lakhs.

FOOD :

I. Pounding and husking of rice and flour grinding :

Both the proportion and absolute number of workers have been going down since 1911. The number of workers now stands at 302,000 against 986,000 in 1911. In the organised sector the number of workers has gone up from 5,000 in 1901 to over 70,000 in 1951 while that in the unorganised sector has gone down from 9.7 lakhs in 1911 to about 2 lakhs in 1951.

II. Grain Parchers :

Both the proportion and absolute number of workers in this industry have been falling since 1901. The number now stands at 108,000 as against 416,000 in 1901. The decline in this industry is not due to the establishment of any organised industry but is the result of change in food habits.

III. Sugar Industries:

The number of workers in the sugar factories has increased continuously since 1911 and has increased greatly since 1931 after the grant of protection to the sugar industry. The number of workers in the gur and hand-made sugar industry has gone down but the figures in the table are not reliable, as gur industry is usually carried on as a secondary occupation to agricultural cultivation.

IV. Oil Pressing :

The proportion of workers in this industry did not fall appreciably between 1901 to 1931 but has fallen steeply from 18.5 per ten thousand of total population in 1931 to 6.4 in 1951. In the organised sector the number of workers has gone up from 5,000 in 1901 to 42,000 in 1951 while in the unorganised sector the number has fallen from 465,000 in 1901 to 185,000 in 1951.

LEATHER, LEATHER PRODUCTS AND FOOTWEAR :

The proportion as well as the absolute number of workers in this group of industries are declining since 1901 continuously. In the organised sector the number of workers has gone up from 9,000 in 1901 to 31,000 in 1951 while in the unorganised sector it has gone down from 11.4 lakhs to 6.5 lakhs during the same period.

BRASS, COPPER AND BELL METAL :

The proportion of workers in these industries has been going down continuously since 1911 but the absolute number has increased since 1931.

POTTERS AND MAKERS OF EARTHEN WARE :

The proportion as well as the number of workers have been falling in these industries since 1911 and the fall has been particularly steep between 1931 and 1951. The number of workers now stands at 4.4 lakhs as against 7.6 lakhs in 1931.

GLASS BANGLES, BEADS AND NECKLACES :

The proportion as well as the number of workers have fallen heavily between 1931 and 1951. The number now stands at 39,000 as against 133,000 in 1931.

WOOD, CANE WORK, MATTING ETC :

The proportion as well as the number of workers have been falling since 1911. In the organised sector consisting of carpentry works and saw mills, the number of workers has increased between 1901 and 1951 while in the unorganised sector it has gone down during the same period. The number of basket-makers etc., has heavily declined from 643,000 in 1911 to 385,000 in 1951.

STOCK RAISING :

The proportion and number of workers have been continuously falling since 1911. The number of herdsmen, shepherds and goat-herds, sheep, goat and pig breaders is now about 9 lakhs as against 28 lakhs in 1911. The reduction of pasturage mainly accounts for this fall.

MATCH AND EXPLOSIVES :

The proportion and number of workers in these industries are increasing since 1901. In the organised sector of match factories the number has increased from 147 in 1901 to 21,000 in 1951. In the unorganised sectors, consisting of matches and explosives, the number has gone up from 5,000 in 1901 to about 8,000 in 1951.

Number of Workers in Selected Occupations, in India Censuses 1901-31 and 1951

Occupation	1951				1931			1921			1911			1901		
	Self-supporting persons			Estimated workers	Workers			Workers			Workers			Workers		
	Persons	Males	Females	Persons	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TEXTILES																
I. Cotton textiles	2053998	1827280	226718	2709913	2721047	1766538	954509	2646005	1601494	1044511	3335995	2108652	1227343	3075088	1943423	1131665
1. *Cotton ginning, cleaning and pressing*	131118	111189	19929	152833	125193	93477	31716	112702	65819	46883	150283	84051	66182	135805	72790	63015
(i) Cotton ginning, cleaning and pressing (Mills)	...	...	...	101448	...	...	...	80686	55288	25398	70147	44061	26086	39901	27354	12547
(ii) Cotton ginning, cleaning and pressing (Hand industry)	...	...	...	51385	...	...	...	32016	10531	21485	80086	39990	40096	95934	45436	50468
2. *Cotton spinning, sizing and weaving*	1830995	1635289	195706	2446921	2503920	1606170	897750	2444340	1477464	966876	3077868	1953146	1124722	2819619	1786550	1033069
(i) Cotton spinning, weaving and other mills	...	...	...	776283	...	...	...	350477	277675	72802	234905	192098	42807	184631	136376	48255
(ii) Others	...	...	...	1670638	...	...	...	2093863	1199789	894074	2842963	1761048	1081915	2634988	1650174	984814
3. *Cotton dyeing, bleaching, printing preparation and sponging*	91885	80802	11083	110159	91934	66891	25043	88963	58211	30752	107894	71455	36439	119664	84083	35581
Total cotton mills	...	...	...	877731	...	...	...	431163	332963	98200	305052	236159	68893	224532	163730	60802
Total cotton hand industry	...	...	...	1832182	...	...	...	2214842	1268531	946311	3030943	1872493	1158450	2850556	1779693	1070863
II. Silk	43375	37189	6186	54424	76857	53730	23127	61838	31480	30358	161393	95480	65913	125869	64499	61370
1. *Silk mills*	...	...	...	22289	...	...	...	6685	5871	814	10211	9351	860	1225	1074	151
2. *Silk hand industry*	...	...	...	32135	...	...	...	55153	25609	29544	151182	86129	65053	124614	63425	61219
(i) Silk worm rearers and cocoon gatherers	7515	6551	964	10477	5283	2736	2547	8351	4919	3432	24194	10031	14163	19571	8444	11127
(ii) Silk reeling, spinning, twisting and weaving	35860	30638	5222	43947	71574	50994	20580	46802	20690	26112	126988	76098	50890	105073	54981	50092
III. Wool industry	59895	49799	10096	78885	103383	61814	41569	109177	68283	40894	155763	90075	65688	165106	93818	71288
1. *Wool carding and spinning*	...	...	...	...	...	...	...	15225	3419	11806				13567	3951	9616
2. *Weaving and manufacture of woollen goods*	...	...	...	...	...	...	...	93952	64864	29088				151539	89867	61672
(i) Carpet weavers	...	...	...	...	...	...	...	6066	4400	1666	155763	90075	65688	7174	6434	740
(ii) Shawl weavers	...	...	...	...	...	...	...	87886	60464	27422				2288	2152	136
(iii) Blanket weavers	...	...	...	...	...	...	...							142077	81281	60796
Woollen mills	...	...	...	22087	...	...	...	5130	4486	644	3250	2438	812	...	...	...
Woollen hand industry	...	...	...	56798	...	...	...	104047	63797	40250	152513	87637	64876	165106	93818	71288
IV. Manufacture of rope, twine, string and other related goods from cocoanuts, aloes, straw, linseed and moonj products	230077	123306	106771	325230	311120	113628	197492	263279	100900	162379	299507	102626	196881	212643	66059	146584
FOOD INDUSTRIES																
I. Pounding and husking of rice and flour grinding	255313	111220	144093	301760	422842	49921	372921	655486	72389	583097	986030	73723	912307	840411	68003	772408
1. *Millers of cereals and pulses*	65462	57238	8224	...	...	...	...	25829	19448	6381	11621	9144	2477	5145	4227	918
(i) Rice mills	...	...	...	...	...	...	...	...	...	...	...	...	...	2761	2013	748
(ii) Flour mills	...	...	...	...	...	...	...	...	...	...	...	...	...	2384	2214	170
2. *Hand pounding and husking of rice and flour grinding*	189851	53991	135860	...	...	...	...	629657	52941	576716	974409	64579	909830	835266	63776	771490
(i) Hand pounding and husking of rice	...	...	...	...	...	...	...	...	...	...	...	...	...	497293	37474	459819
(ii) Flour grinding	...	...	...	...	...	...	...	...	...	...	...	...	...	337973	26302	311671
II. Grain parchers, etc.	93490	60872	[illegible]	197656	[illegible]	99811	160634	285164	103725	181439	380752	153114	227638	416316	174612	241704
III. Sugar industry	133843	126402	[illegible]	171060	26381	16612	9769	48984	38085	10899	85734	31046	54688	105287	63813	[illegible]
1. *Sugar factories*	...	...	...	100599	...	...	...	21424	20461	963	[illegible]	7509	617	27974	26667	1307
2. *Makers of sugar, molasses and gur by hand*	...	...	...	70621	...	...	...	27560	17624	9936	47615	23544	24071	79315	37148	[illegible]
IV. Oil pressers	199074	107641	91433	226803	806658	616688	189970	489227	[illegible]	[illegible]	429900	212718	217182	470858	[illegible]	[illegible]
1. *Oil mills*	...	...	...	49318	...	...	...	2046	1519	527	9745	8154	1591	4303	3069	1230
2. *Oil pressing (Kolhu)*	...	...	...	184589	...	...	...	487181	309081	178100	420157	203574	216743	465403	[illegible]	162109
Leather, leather products and footwear	677993	629146	48847	680611	901971	783312	118659	1097582	909105	188477	1072457	872845	199612	1138944	[illegible]	[illegible]
(i) Tanneries and leather factories								15090	14232	858	17249	16085	[illegible]	8727	7764	963
(ii) Leather dyers	86978	80611	[illegible]	100183	255080	249780	43900	169081	125509	[illegible]	168774	140304	28470	78189	27908	50281
(iii) Tanners and curriers														242062	193451	48611

Numer of Workers in Selected Occupations, in India Censuses 1901-31 and 1951

Occupation	1951				1931			1921			1911			1901		
	Self-supporting persons			Estimated workers	Workers			Workers			Workers			Workers		
	Persons	Male	Females	Persons	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
(iv) Shoe, boots and sandal makers	402813	382132	20681					801778	670117	131661	803176	649353	153823	755111	606752	148359
(v) Water bag, well bag, bucket and ghee pot makers	83201	76402	6799	{ 575328	608291	533527	74764	111689	91186	20503	81958	72525	9433	68075	58460	9615
Leather factories	...	...	...	30889	...	...	...	15090	14233	857	17549	16663	886	8727	7764	963
Leather hand industry	...	...	...	649622	...	...	...	1072492	884872	187620	1054908	862182	192726	1144317	916631	228186
BRASS, COPPER AND BELL METAL	95571	91886	3685	109501	92043	83227	8816	91739	78339	13400	106992	94526	12466	93748	83870	9478
(i) Brass foundries	...	...	...	...	...	...	...	...	...	...	1392	1376	16	1976	1792	184
(ii) Brass, copper and bell metal	...	...	...	...	...	...	...	...	...	...	105600	93150	12450	91372	82078	9294
POTTERS AND MAKERS OF EARTHEN WARE	360196	308055	52141	442431	755468	503900	251568	760782	489503	271279	868328	549464	318864	779076	519991	259085
GLASS BANGLES, BEADS AND NECKLACES	32204	30485	1719	38999	132919	82424	50495	20134	12916	7218	91660	54653	37007	60800	37640	23160
(I) Makers of glass bangles	...	...	...	...	...	...	...	...	...	...	...	...	...	36590	23106	13484
(ii) Rosary bead and necklace makers	...	...	...	...	...	...	...	...	...	...	...	...	...	24210	14534	9676
WOOD, CANE WORK MATTING ETC.	1136915	1020107	116808	1320800	1462559	1130915	331644	1490593	1117277	373316	1829901	1266746	563155	1315144	985452	3329692
(i) Carpentry work				9539				6157	5943	214	5063	4945	118	4873	4537	336
(ii) Carpenters and turners etc.	{ 638464	621589	16875	705342	{ 704020	684312	19708	685625	647477	38148	1179167 (including woodcutters and sawyers)	952215	226952	676126	645181	30945
(iii) Saw mills				8639				6832	6253	579	2657	2267	390	1740	1577	163
(iv) Wood cutters and Sawyers	{ 180682	162465	18217	212105	{ 224487	181716	42771	278328	200028	78300	(Included in carpenters and turners)			72207	67871	4336
(v) Basket makers and other industries of woody material including leaves	317769	236053	81716	385125	534052	264887	269165	513651	257576	256075	643014	307319	335695	560198	266286	293912
STOCK RAISING																
(i) Herdsmen														1476930	1291538	185392
(ii) Shepherd and goat herds	{ 356214	319922	36292	{ 921915	{ 2234887	1837970	396917	{ 2106511	1717396	389115	2601287	2209021	392266	445572	359356	86216
(iii) Sheep goat and pig breeders	252839	222006	30833					148613	115334	33279	196957	153221	43736	131449	110122	21327
MATCHES AND EXPLOSIVES	24816	20710	4106	28260	16498	12347	4151	6918	5539	1379	7477	5867	1610	4891	4489	402
(i) Match factories	...	...	...	20618	...	...	...	377	295	82	637	491	146	147	143	4
(ii) Manufacture of matches and other explosives	...	...	...	7642	...	...	...	6541	5244	1297	6840	5376	1464	4744	4346	398

NOTES :
1. The figures of persons (col. 5) employed in mills have been taken from 'Large Industrial Establishments in India—1947' Published by the Ministry of Labour – 1952.
2. The figures of workers under a particular occupation do not include the figures of Self-supporting persons following the occupation as a secondary.
3. Dashes (...) stand for figures not available.

	1911			1901		
	Workers			Workers		
Females	Persons	Males	Females	Persons	Males	Females
11	12	13	14	15	16	17
131661	803176	649353	153823	755111	606752	148359
20503	81958	72525	9433	68075	58460	9615
857	17549	16663	886	8727	7764	963
187620	1054908	862182	192726	1144317	916631	228186
13400	106992	94526	12466	93748	83870	9478
...	1392	1376	16	1976	1792	184
...	105600	93150	12450	91372	82078	9294
271279	868328	549464	318864	779076	519991	259085
7218	91660	54653	37007	60800	37640	23160
...	...	...	...	36590	23106	13484
...	...	...	...	24210	14534	9676
373316	1829901	1266746	563155	1315144	985452	3329692
214	5063	4945	118	4873	4537	336
38148	1179167 (includingwoodcutters and sawyers)	952215	226952	676126	645181	30945
579	2657	2267	390	1740	1577	163
78300	(Included in carpenters and			[illegible]	[illegible]	

Number of workers per 10,000 of total population in India in selected occupations 1901-1931 and 1951

Occupation	1951	1931	1921	1911	1901
TEXTILES					
I. COTTON TEXTILES ...	76.0	98.7	106.6	134.0	130.6
1. Cotton ginning, cleaning and pressing ...	4.3	4.5	4.5	6.0	5.8
(i) Cotton ginning, cleaning and pressing (mills) ...	2.9	...	3.2	2.8	1.7
(ii) Cotton ginning, cleaning and pressing (hand industry) ...	1.4	...	1.3	3.2	4.1
2. Cotton spinning, sizing and weaving ...	68.6	90.9	98.5	123.6	119.7
(i) Cotton spinning, weaving and other mills ...	21.8	...	14.1	9.4	7.8
(ii) Others ...	46.8	...	84.4	114.2	111.9
3. Cotton dyeing, bleaching printing preparation and sponging ...	3.1	3.3	3.6	4.4	5.1
Total cotton mills ...	24.6	...	17.4	12.3	9.5
Total cotton hand industry ...	51.4	...	89.2	121.7	121.1
II. SILK ...	1.5	2.8	2.5	6.5	5.3
1. Silk mills ...	0.6	...	0.3	0.4	0.0
2. Silk hand industry ...	0.9	...	2.2	6.1	5.3
(i) Silk worm rearers and cocoon gatherers ...	0.3	0.2	0.3	1.0	0.8
(ii) Silk reeling, spinning, twisting and weaving ...	1.2	2.6	1.9	5.1	4.5
III. WOOL INDUSTRY ...	2.2	3.8	4.4	6.3	7.0
1. Wool carding and spinning ...	...	...	0.6	6.3 (bracketed: 1 and 2)	0.6
2. Weaving and manufacture of woollen goods. ...	...	...	3.8		6.4
(i) Carpet weavers ...	...	...	0.3		0.3
(ii) Shawl weavers ...	...	...	3.5 (bracketed: (ii) and (iii))		0.1
(iii) Blanket weavers ...	...	...			6.0
Woollen mills ...	0.6	...	0.2	0.2	...
Woollen hand industry ...	1.6	...	4.2	6.1	7.0
IV. MANUFACTURE OF ROPE, TWINE STRING AND OTHER RELATED GOODS FROM COCOANUTS, ALOES, STRAW, LINSEED AND MOONJ PRODUCTS. ...	9.1	11.2	10.6	12.0	9.0

Occupation	1951	1931	1921	1911	1901
FOOD INDUSTRIES					
I. POUNDING AND HUSKING OF RICE AND FLOUR GRINDING ...	8.5	15.4	26.4	39.6	35.7
1. Millers of cereals and pulses ...	...	...	1.0	0.5	0.2
(i) Rice mills ...	...	...	...	...	0.1
(ii) Flour mills ...	...	...	...	...	0.1
2. Hand pounding and husking of rice and flour grinding ...	...	...	25.4	39.1	35.5
(i) Hand pounding and husking of rice ...	...	...	...	...	21.1
(ii) Flour grinding ...	...	...	...	...	14.4
II. GRAIN PARCHERS, ETC. ...	3.0	9.8	11.5	14.1	17.7
III. SUGAR INDUSTRY ...	4.8	1.0	2.0	2.2	4.4
1. Sugar factories ...	2.8	...	0.9	0.3	1.2
2. Makers of sugar, molasses and gur by hand ...	2.0	...	1.1	1.9	3.2
IV. OIL PRESSING ...	6.4	18.5	18.5	21.3	20.0
1. Oil mills ...	1.2	...	0.1	0.4	0.2
2. Oil pressing (Kolhu) ...	5.2	...	18.4	20.9	19.8
LEATHER, LEATHER PRODUCTS AND FOOTWEAR ...	19.0	32.7	43.8	43.1	49.0
(i) Tanneries and leather factories			0.6	0.7	0.4
(ii) Leather dyers ...	2.9	10.7			3.3
(iii) Tanners and curriers ...			6.4	6.8	10.3
(iv) Shoes, boots and sandal makers			32.3	32.3	32.1
(v) Water bags, well bag, bucket and ghee pot makers ...	16.1	22.0	4.5	3.3	2.9
Leather factories ...	0.8	...	0.6	0.7	0 4
Leather hand industry ...	18.2	...	43.2	42.4	48.6
WORKERS IN BRASS, COPPER AND BELL METAL ...	3.1	3.3	3.7	4.3	4.0
(i) Brass foundries. ...	...	...	...	0.1	0.1
(ii) Brass, copper and bell metal workers ...	...	...	...	4.2	3.9
POTTERS AND MAKERS OF EARTHEN WARE ...	12.4	27.4	30.6	30.9	33.1
MAKERS OF GLASS BANGLES, BEADS AND NECKLACES ...	1.1	4.8	0.8	3.7	2.6
(i) Makers of glass bangles ...	...	...	...	...	1.6
(ii) Rosary beads and necklace makers	...	...	...	...	1.0

Occupation	1951	1931	1921	1911	1901
WOOD, CANE WORK, MATTING AND LEAVES ETC. ...	37.0	53.1	60.1	73.5	55.9
(i) Carpentry works ...	0.3	25.6 (i and ii combined)	0.3	0.2	0.2
(ii) Carpenters and turners etc. ...	19.8		27.6	47.4 (including wood cutters & sawyers)	28.7
(iii) Saw mills ...	0.2	8.1 (iii and iv combined)	0.3	0.1	0.1
(iv) Wood cutters and sawyers ...	5.9		11.2	...	3.1
(v) Basket makers and other industries of woody material including leaves ...	10.8	19.4	20.7	25.8	23.8
STOCK RAISING					
(i) Herdsmen ...	25.8 (i–iii combined)	81.1 (i–iii combined)	84.9 (i and ii combined)	104.5 (i and ii combined)	62.7
(ii) Shepherds and goat herds ...					18.9
(iii) Sheep goat and pig breeders...			6.0	7.9	5.6
MATCHES AND EXPLOSIVES ...	0.8	0.6	0.3	0.3	0.2
(i) Match factories ...	0.6	...	0.0	0.0	0.0
(ii) Manufacture of matches and other explosives ...	0.2	...	0.3	0.3	0.2

Number of workers in certain selected occupations, in Uttar Pradesh 1901-31 and 1951

Occupation	1951 Self-supporting persons			1951 Estimated workers	1931 Workers			1921 Workers			1911 Workers			1901 Workers		
	Persons	Males	Females	Persons	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
TEXTILES																
I. COTTON TEXTILES (excluding carpet and rug making) ...	266,645	244,462	22,183	351,194	437,662	302,250	135,412	505,286	286,230	219,056	526,880	333,338	193,542	669,328	419,694	249,634
1. Cotton ginning, cleaning and pressing) ...	17,111	14,937	2,174	22,965	38,226	27,845	10,381	52,763	30,154	22,609	59,240	32,756	26,484	70,090	46,650	23,440
(i) Cotton ginning, cleaning and pressing (Mills) ...	...	...	...	709[1]	9,876	...	...	9,559	...	...	12,520[2]	...	...	5,501	4,846	655
(ii) Cotton ginning, cleaning and pressing (Hand industry) ...	...	...	...	22,156	28,350	...	...	43,204	...	...	46,720	...	...	64,589	41,804	22,785
2. Cotton spinning, sizing and weaving ...	240,163	220,632	19,531	316,358	382,200	260,917	121,283	442,090	248,394	193,696	443,955	283,275	160,680	582,113	360,053	222,060
(i) Cotton spinning, weaving and other mills ...	112,695	109,697	2,998	56,241[1]	29,460	...	...	18,534	...	...	15,429[2]	...	...	474	472	2
(ii) Cotton spinning and sizing ...	17,039	10,097	6,942 }	260,117	352,740	...	...	423,556	...	...	428,526	...	...	{ 88,695	22,122	66,573
(iii) Cotton weaving ...	110,429	100,838	9,591 }											{ 492,944	337,459	155,485
3. Cotton dyeing, bleaching, printing preparation and sponging	9,371	8,893	478	11,871	17,236	13,488	3,748	10,433	7,682	2,751	23,685	17,307	6,378	17,125	12,991	4,134
(i) Cotton dyeing ...	5,709	5,477	232	...	...	...	...	...	...	...	...	...	...	3,085	1,894	1,191
(ii) Cotton printing ...	3,662	3,416	246	...	...	...	...	...	...	...	...	...	...	14,040	11,097	2,943
4. Cotton carpet and rug making	10,673	[illegible]	[illegible]	...	...	...	...	...	...	...	...	...	...	4,114	3,789	325
Total cotton mills ...	112,695	109,[illegible]	[illegible]	...	...	...	...	...	...	...	...	...	...	5,975	5,318	657
Total cotton hand industry ...	164,623	144,428	20,195	...	...	...	...	...	...	...	...	...	...	667,467	418,165	249,302
II. SILK ...	724	618	106	1,055	5,862	4,771	1,091	1,999	761	1,238	7,614	5,667	1,947	6,353	3,906	2,447
1. Silk mills ...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	8	...
2. Silk hand industry ...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,347	3,900	2,447
(i) Silk worm rearers and cocoon gatherers ...	...	...	...	...	...	...	...	...	...	...	...	...	...	106	78	28
(ii) Silk reeling, spinning, twisting and weaving ...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,241	3,822	2,419
III. WOOL INDUSTRY ...	19,889	15,546	3,343	25,232	19,527	11,573	7,954	14,993	7,612	7,381	23,474	12,508	10,966	23,048	14,388	8,660
1. Wool carding and spinning ...	2,904	2,026	878	...	...	...	...	1,855	184	1,671	...	...	...	536	42	494
2. Weaving and manufacture of woollen goods ...	15,985	13,020	2,965	...	...	...	...	12,539	6,828	5,710	...	...	...	22,512	14,346	8,166
(i) Carpet weavers ...	...	...	...	...	...	...	...	481	433	48	...	...	...	3,896 / 19	3,081 / 19	335 / ...
(ii) Shawl weavers ...	...	...	...	...	...	...	...	12,057	6,395	5,662	...	...	...	} 19,087	11,261	7,826
(iii) Blanket weavers ...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	5	5
(iv) Woollen cloth and yarn ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
(v) Wool dyers ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Woollen mills ...	...	...	...	3,792[1]	1,485	...	...	2,955	...	...	21,27[illegible][2]	...	...	...	...	...
Woollen hand industry ...	...	...	...	21,440	18,042	...	...	11,438	...	...	21,347	...	...	...	...	...
IV. MANUFACTURE OF ROPE, TWINE, STRING AND OTHER RELATED GOODS FROM COCOANUTS, ALOES, STRAW, LINSEED AND HAIR AND WOOD PRODUCTS ...	15,289	11,616	3,673	19,695	29,225	13,365	15,860	22,600	8,861	13,739	35,024	13,329	21,695	13,299	7,014	6,285
FOOD INDUSTRIES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1. Pounding and husking of rice and flour grinding / Millers of cereals and pulses	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2. Hand pounding and husking of rice and flour grinding ...	[illegible]	[illegible]	17,516	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(i) Hand pounding and husking of rice	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(ii) Flour grinding	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	784	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] mills / [illegible] pressing (Mills)	...	...	...	[illegible]	[illegible]	...	...	[illegible]	...	...	[illegible]	...	...	[illegible]	[illegible]	[illegible]

h, 1901—31 and 1951

		1911			1901		
s		Workers			Workers		
	Females	Persons	Males	Females	Persons	Males	Females
1	28,260	127,717	110,281	17,436	147,987	118,134	29,853
	...	4,201[2]	...	...	112	88	24
					6,440	5,437	1,003
	...	49,969	...	... }			
					78,594	60,294	18,300
1	9,785	70,745	61,809	8,936	61,414	50,942	10,472
7	11,555	2,802	2,732	70	1,427	1,373	54
3	1,955	15,153	13,813	1,340	22,992	21,158	1,834
					10	10	...
3	1,955	15,153	13,813	1,340 }			
					22,982	21,148	1,834
0	57,578	184,800	111,675	73,125	190,838	122,452	68,386
1	4,391	26,665[4]	16,939	9,726	23,848	16,386	7,462
	...	...	...	...	15,156	10,350	4,806
	...	...	...	...	8,692	6,036	2,656
9	26,441	220,549	179,328	41,221	240,348	198,143	42,205
1	5,176	139,667	131,595	8,072	149,625	143,246	6,379
	72				8,244	7,742	502

Number of workers per 10,000 of total population in Uttar Pradesh in selected occupations 1901-31 and 1951.

Occupation	1951	1931	1921	1911	1901
TEXTILES					
I. COTTON TEXTILES ...	55.6	88.2	108.6	109.7	138.0
1. Cotton ginning, cleaning and pressing ...	3.6	7.7	11.3	12.3	14.5
(i) Cotton ginning, cleaning and pressing (mills) ...	0.1	2.0	2.1	2.6	1.1
(ii) Cotton ginning, cleaning and pressing (hand industry) ...	3.5	5.7	9.3	9.7	13.3
2. Cotton spinning, sizing and weaving ...	50.0	77.0	95.1	92.5	120.0
(i) Cotton spinning, weaving and other mills ...	8.9	5.9	4.0	3.2	0.1
(ii) Cotton spinning and sizing ... }	41.1	71.1	91.1	89.3 {	18.3
(iii) Cotton weaving ... }					101.7
3. Cotton dyeing, bleaching, printing, preparation and sponging ...	1.9	3.5	2.2	4.9	3.5
(i) Cotton dyeing ...	...	...	...	...	0.6
(ii) Cotton printing ...	...	...	...	...	2.9
4. Cotton carpet and rug making ...	...	...	...	...	0.8
Total cotton mills ...	...	...	...	...	1.2
Total cotton hand industry ...	...	...	...	...	137.6
II. SILK ...	0.2	1.2	0.4	1.6	1.3
1. Silk mills ...	...	...	...	...	...
2. Silk hand industry ...	...	...	...	...	1.3
III. WOOL ...	4.0	3.9	3.1	4.9	4.8
1. Wool carding and spinning ...	...	...	0.4	...	0.1
2. Weaving and manufacture of woollen goods ...	...	...	2.7	...	4.6
(i) Carpet weavers ...	...	...	0.1	...	0.7
(ii) Shawl weavers ...	...	...	...	...	...
(iii) Blanket weavers ...	...	...	2.6	...	} 3.9
(iv) Woollen cloth and yarn ...	...	...	...	...	}
(v) Wool dyers ...	...	...	...	...	...
Woollen mills ...	0.6	0.3	0.6	0.4	...
Woollen hand industry ...	3.4	3.6	2.5	4.4	...
V. MANUFACTURE OF ROPE, TWINE, STRING AND OTHER RELATED GOODS FROM COCOANUT, ALOES, STRAW, LINSEED AND HAIR AND MOONJ PRODUCTS ...	3.1	6.1	4.9	7.3	2.7

Occupation	1951	1931	1921	1911	1901
FOOD INDUSTRIES					
I. POUNDING AND HUSKING OF RICE AND FLOUR GRINDING ...	11.5	26.0	37.1	49.8	28.7
1. Millers of cereals and pulses ...	...	...	...	...	0 1
(i) Rice mills ...	...	...	...	...	...
(ii) Flour mills ...	...	...	...	...	0.1
2. Hand pounding and husking of rice and flour grinding ...	...	...	...	...	28.6
(i) Hand pounding and husking of rice ...	...	...	...	...	1.5
(ii) Flour grinding ...	...	...	...	...	27.1
II. GRAIN PARCHERS, ETC. ...	10.1	27 8	28.4	34 0	36.3
III. SUGAR INDUSTRY ...	12 3	1.4[3]	1 5	3.1	6 6
1. Sugar factories ...	...	1.9	0.7	0.3	4.1
2. Makers of sugar, molasses and gur by hand ...	...	...	0.9	2.7	2.4
IV. OIL PRESSING ...	16.6	46 3	48.3	49.7	45.2
1. Oil mills ...	1.0	0.5	0.2	0.1	...
2. Oil pressing (kolhu) ...	15.5	45.8	48 2	49.6	45.2
LEATHER, LEATHER PRODUCTS AND FOOTWEAR ...	17.5	31.4	33.8	26.6	30.5
(i) Tanneries and leather factories	1.0	0.6	1.4	0.9	...
(ii) Leather dyers ...	1.2	18.1	6.3	10.4	1.3
(iii) Tanners and curriers ...					16.2
(iv) Shoe, boots and sandal makers	15.3	12.8	16.1	14.7	12.7
(v) Water bag, well bag, bucket and ghee pot makers ...			10.0	0.6	0.3
WORKERS IN BRASS, COPPER AND BELL METAL ...	5.6	2.6	2.7	3.2	4.7
(i) Brass foundries owners, managers, etc. ...	5.6	2.6	2.7	3.2	...
(ii) Brass copper and bell metal workers ...					4.7
POTTERS AND MAKERS OF EARTHEN WARE	13.7	35.8	32.6	38.5	39.4
MAKERS OF GLASS BANGLES, BEADS AND NECKLACES ...	4.4	2.7	2.6	5.6[4]	4.9
(i) Makers of glass bangles ...	...	...	...	...	3.1
(ii) Rosary bead and necklace makers ...	...	...	...	...	1.8
WOOD, CANE WORK, MATTING AND LEAVES ...	33.5	36.9	36.7	45.9	49.6
(i) Carpenters and turners, etc ...	19 0	24.6	24.8	29.1	30.9
(ii) Wood cutters and sawyers ...	1.8	0.6	0.5		1.7

Occupation	1951	1931	1921	1911	1901
(iii) Basket makers and other industries of woody material including leaves ...	12.7	11.7	11.3	16.8	17.0
STOCK RAISING ...	12.6	111.7	127.4	131.7	72.5
(i) Herdsmen ...					44.0
(ii) Shepherd and goat herds ...	3.9	110.6	119.3	127.9	13.0
(iii) Sheep, goat and pig breeders...			1.5	1.9	3.5
(iv) Cattle and buffaloe keepers ...	8.6	1.1	6.6	1.9	11.9
PAPER AND PAPER PRODUCTS ...	...	...	0.1[3]	0.1[3]	0.1
(i) Paper mills ...	0.3	0.1	0.1	0.1	...
(ii) Manufacture of paper, card board and papier mache ...	...	...	...	...	0.1
TRADE IN GRAINS AND PULSES ...	16.4	68.7	54.6	63.6	57.0
TRADE IN FUEL (INCLUDING PETROL) ...	4.3	9.0	10.4	11.8	6.0
TRANSPORT ...	44.6	36.9	32.9	36.0	42.7
(i) Transport by road ...	27.0	21.3	17.5	22.4	32.9
(ii) Transport by water ...	1.2	3.1	2.0	2.2	3.7[4]
(iii) Transport by air ...	0.3	...	...	...	...
(iv) Railway transport ...	16.1	12.4	13.3	11.4	6.1

(In 1951, 1931, 1921 and 1911 the figures for Herdsmen and Shepherd and goat herds are bracketed together; in 1951 and 1931 Sheep, goat and pig breeders are also included in the bracket.)

[3]. The figure does not seem to be reliable.

[4]. Including makers of bangles, beads and necklaces of other materials.